SKEPTICAL INQUIRER

Vol. 17, No. 1 Fall 1992 / $6.25

ISAAC ASIMOV

TRIBUTES BY
ARTHUR C. CLARKE, FREDERIK POHL,
HARLAN ELLISON, CARL SAGAN,
STEPHEN JAY GOULD, MANY OTHERS

GAIA WITHOUT MYSTICISM

RUNESTONE HOAXES
NIGHT TERRORS & SLEEP PARALYSIS
CREATIONIST PSEUDOSCIENCE

Published by the Committee for the Scientific Investigation of Claims of the Paranormal

THE SKEPTICAL INQUIRER (ISSN 0194-6730) is the official journal of the Committee for the Scientific Investigation of Claims of the Paranormal, an international organization.

Editor Kendrick Frazier.
Editorial Board James E. Alcock, Martin Gardner, Ray Hyman, Philip J. Klass, Paul Kurtz.
Consulting Editors Isaac Asimov, William Sims Bainbridge, John R. Cole, Kenneth L. Feder, C. E. M. Hansel, E. C. Krupp, David F. Marks, Andrew Neher, James E. Oberg, Robert Sheaffer, Steven N. Shore.
Managing Editor Doris Hawley Doyle. **Contributing Editor** Lys Ann Shore.
Business Manager Mary Rose Hays. **Assistant Business Manager** Sandra Lesniak
Chief Data Officer Richard Seymour. **Computer Assistant** Michael Cione.
Production Paul E. Loynes. **Art** Linda Hays. **Audio Technician** Vance Vigrass. **Librarian,** Ranjit Sandhu.
Staff Leland Harrington, Jonathan Jiras, Alfreda Pidgeon, Kathy Reeves, Elizabeth Begley (Albuquerque).
Cartoonist Rob Pudim.

The Committee for the Scientific Investigation of Claims of the Paranormal

Paul Kurtz, Chairman; professor emeritus of philosophy, State University of New York at Buffalo.
Barry Karr, Executive Director and Public Relations Director.
Lee Nisbet, Special Projects Director.

Fellows of the Committee

James E. Alcock, psychologist, York Univ., Toronto; **Isaac Asimov,** biochemist, author; **Robert A. Baker,** psychologist, Univ. of Kentucky; **Barry Beyerstein,** biopsychologist, Simon Fraser University, Vancouver, B.C., Canada; **Irving Biederman,** psychologist, University of Minnesota; **Susan Blackmore,** psychologist, Brain Perception Laboratory, University of Bristol, England; **Henri Broch,** physicist, University of Nice, France; **Vern Bullough,** Distinguished Professor, State University of New York; **Mario Bunge,** philosopher, McGill University; **John R. Cole,** anthropologist, Institute for the Study of Human Issues; **F. H. C. Crick,** biophysicist, Salk Institute for Biological Studies, La Jolla, Calif.; **L. Sprague de Camp,** author, engineer; **Cornelis de Jager,** professor of astrophysics, Univ. of Utrecht, the Netherlands; **Bernard Dixon,** science writer, London, U.K.: **Paul Edwards,** philosopher, Editor, *Encyclopedia of Philosophy;* **Antony Flew,** philosopher, Reading Univ., U.K.; **Andrew Fraknoi,** astronomer, executive officer, Astronomical Society of the Pacific; editor of *Mercury;* **Kendrick Frazier,** science writer, Editor, THE SKEPTICAL INQUIRER; **Yves Galifret,** Exec. Secretary, l'Union Rationaliste; **Martin Gardner,** author, critic; **Murray Gell-Mann,** professor of physics, California Institute of Technology; **Henry Gordon,** magician, columnist, broadcaster, Toronto; **Stephen Jay Gould,** Museum of Comparative Zoology, Harvard Univ.; **C. E. M. Hansel,** psychologist, Univ. of Wales; **Al Hibbs,** scientist, Jet Propulsion Laboratory; **Douglas Hofstadter,** professor of human understanding and cognitive science, Indiana University; **Ray Hyman,** psychologist, Univ. of Oregon; **Leon Jaroff,** sciences editor, *Time;* **Lawrence Jerome,** science writer, engineer; **Philip J. Klass,** science writer, engineer; **Marvin Kohl,** professor of philosophy, SUNY at Fredonia; **Edwin C. Krupp,** astronomer, director, Griffith Observatory; **Paul Kurtz,** chairman, CSICOP, Buffalo, N.Y.; **Lawrence Kusche,** science writer; **Paul MacCready,** scientist/engineer, AeroVironment, Inc., Monrovia, Calif.; **David Marks,** psychologist, Middlesex Polytech, England; **David Morrison,** space scientist, NASA Ames Research Center; **Richard A. Muller,** professor of physics, Univ. of Calif., Berkeley; **H. Narasimhaiah,** physicist, president, Bangalore Science Forum, India; **Dorothy Nelkin,** sociologist, Cornell University. **Joe Nickell,** author, technical writing instructor, University of Kentucky; **Lee Nisbet,** philosopher, Medaille College; **James E. Oberg,** science writer; **John Paulos,** mathematician, Temple University; **Mark Plummer,** lawyer, Australia; **W. V. Quine,** philosopher, Harvard Univ.; **Milton Rosenberg,** psychologist, University of Chicago; **Carl Sagan,** astronomer, Cornell Univ.; **Evry Schatzman,** President, French Physics Association; **Eugenie Scott,** physical anthropologist, executive director, National Center for Science Education, Inc.; **Thomas A. Sebeok,** anthropologist, linguist, Indiana University; **Robert Sheaffer,** science writer; **Dick Smith,** film producer, publisher, Terrey Hills, N.S.W., Australia; **Robert Steiner,** magician, author, El Cerrito, California; **Carol Tavris,** psychologist and author, Los Angeles, California; **Stephen Toulmin,** professor of philosophy, Northwestern Univ.; **Marvin Zelen,** statistician, Harvard Univ. (Affiliations given for identification only.)

Manuscripts, letters, books for review, and editorial inquiries should be addressed to Kendrick Frazier, Editor, THE SKEPTICAL INQUIRER, 3025 Palo Alto Dr., N.E., Albuquerque, NM 87111.

Subscriptions, change of address, and advertising should be addressed to: THE SKEPTICAL INQUIRER, Box 703, Buffalo, NY 14226-0703. Old address as well as new are necessary for change of subscriber's address, with six weeks advance notice. Subscribers to THE SKEPTICAL INQUIRER may not speak on behalf of CSICOP or THE SKEPTICAL INQUIRER.

Inquiries from the media and the public about the work of the Committee should be made to Paul Kurtz, Chairman, CSICOP, Box 703, Buffalo, NY 14226-0703. Tel.: (716) 636-1425. FAX: (716)-636-1733.

Articles, reports, reviews, and letters published in THE SKEPTICAL INQUIRER represent the views and work of individual authors. Their publication does not necessarily constitute an endorsement by CSICOP or its members unless so stated.

THE SKEPTICAL INQUIRER is indexed in the *Readers' Guide to Periodical Literature.*

Copyright ©1992 by the Committee for the Scientific Investigation of Claims of the Paranormal, 3965 Rensch Road, Buffalo, NY 14228. All rights reserved. THE SKEPTICAL INQUIRER is available on 16mm microfilm, 35mm microfilm, and 105mm microfiche from University Microfilms International.

Subscription Rates: Individuals, libraries, and institutions, $25.00 a year; back issues, $6.25 each.

Postmaster: THE SKEPTICAL INQUIRER is published quarterly, Winter, Spring, Summer, and Fall. Printed in the U.S.A. Second-class postage paid at Buffalo, New York, and additional mailing offices. Send changes of address to THE SKEPTICAL INQUIRER, Box 703, Buffalo, NY 14226-0703.

SKEPTICAL INQUIRER

Vol. 17, No. 1, Fall 1992

Journal of the Committee for the Scientific Investigation of Claims of the Paranormal

A CELEBRATION OF ISAAC ASIMOV: A MAN FOR THE UNIVERSE 30
Kendrick Frazier, Arthur C. Clarke, Frederik Pohl, Harlan Ellison, L. Sprague de Camp, Carl Sagan, Stephen Jay Gould, Martin Gardner, Paul Kurtz, Donald Goldsmith, James Randi, and E. C. Krupp

ARTICLES

Gaia Without Mysticism — *Phil Shannon* 48
Gaia's Scientific Coming of Age — *Kendrick Frazier* 50
The Curse of the Runestone: Deathless Hoaxes — *John Whittaker* 57
Night Terrors, Sleep Paralysis, and Devil-Stricken Telephone Cords from Hell — *Peter Huston* 64
Scientific Creationism: The Social Agenda of a Pseudoscience — *Steven N. Shore* 70
Observing Stars During the Daytime: The Chimney Myth — *Richard Sanderson* 74
Does an Ancient Jewish Amulet Commemorate the Conjunction of 2 B.C.? — *David P. Rubincam* 78

NEWS AND COMMENT 5
Geller Suit Against CSICOP Dismissed / Junk Science and the Courts / U.S. Public Positive About Science / Francis Huxley Defends Anecdotal Evidence / American Conference on Angels / Asimov on Stamp in 2002? / Paul Kurtz Elected AAAS Fellow / For the Record

NOTES OF A FRINGE-WATCHER
Marianne Williamson and 'A Course in Miracles' — *Martin Gardner* 17

PSYCHIC VIBRATIONS
TV's UFO Flap, Earthquake Lights, and Francis Bacon — *Robert Sheaffer* 26

BOOK REVIEWS
Rosemary Ellen Guiley, *Vampires Among Us;* Paul Barber, *Vampires, Burial and Death: Folklore and Reality* — *Peter Huston* 81

RECENT BOOKS 84

ARTICLES OF NOTE 85

FOLLOW-UP
The 'Bloody Miracle' of San Gennaro / Atomic Arithmetic 91

FORUM
Prospecting for Skepticism 97

LETTERS TO THE EDITOR 99

ON THE COVER: Eggshell Earth: abstract graphics composition featuring the classic Apollo 11 photo of Earth (by Tony Craddock/Science Photo Library). Cover design by Linda Hays.

The Committee for the Scientific Investigation
of Claims of the Paranormal
announces the

1992 CSICOP Conference

at the **Harvey Hotel** in

Dallas, Texas

Friday, Saturday, and Sunday
October 16, 17, and 18, 1992

FAIRNESS, FRAUD AND FEMINISM: CULTURE CONFRONTS SCIENCE

Keynote Address
(Friday at 8:30 P.M.)

Richard Dawkins
distinguished professor of zoology at Oxford University,
author of *The Blind Watchmaker* and *The Selfish Gene*

Friday, October 16

7:30 - 9:00 A.M.: Registration

9:00 - 9:15 A.M.: Opening Remarks — **Paul Kurtz,** CSICOP Chairman

9:15 A.M. - 12 NOON: **MULTICULTURAL APPROACHES TO SCIENCE: THE GOOD, THE BAD, AND THE UGLY**

Moderator: **Eugenie Scott,** Executive Director, National Center for Science Education
Bernard Ortiz de Montellano, professor of anthropology, Wayne State University
Diana Marinez, professor of biochemistry, Michigan State University
Joseph Dunbar, professor of physiology, Wayne State University

12 NOON - 2:00 P.M.: **Lunch Break**

2:00 - 5:00 P.M.: **GENDER ISSUES IN SCIENCE AND PSEUDOSCIENCE**

Moderator: **James Alcock,** professor of psychology, Glendon College, York University, Toronto
Susan Blackmore, psychologist, University of Bristol, U.K.
Carol Tavris, social psychologist, author of *The Mismeasure of Woman*
Steven Goldberg, professor of sociology, City College, City University of New York, and author of *The Inevitability of Patriarchy*

Friday (continued)

5:15 - 6:15 P.M.: Reception (Cash Bar)

6:15 - 8:30 P.M.: Dinner

THE FUTURE OF SKEPTICISM: THE PRICE OF REASON

with the CSICOP Executive Council, Paul Kurtz, James Alcock, Barry Beyerstein, Susan Blackmore, Kendrick Frazier, Ray Hyman, Philip J. Klass, Joe Nickell, and Lee Nisbet

8:30 P.M.: KEYNOTE ADDRESS

Richard Dawkins, professor of zoology, Oxford University, and author of *The Blind Watchmaker* and *The Selfish Gene*

Saturday, October 17

8:00 - 9:00 A.M.: Registration

9:00 A.M. - 12 NOON: FRAUD IN SCIENCE

Moderator: **Elie Shneour,** Director, Biosystems Research Institute
Paul Friedman, professor of radiology, School of Medicine, University of California, San Diego, at La Jolla
Clark Glymour, professor of philosophy, Carnegie-Mellon University
Walter Stewart, National Institutes of Health

12 NOON - 2:00 P.M.: CSICOP Luncheon

Sergei Kapitza, editor of Russian edition of *Scientific American*; member Russian Academy of Sciences
Evry Schatzman, former president, French Physics Society; member French Academy of Science

2:00 - 5:00 P.M.: Two Concurrent Sessions

Session 1. CRASHED SAUCERS

Moderator: **Philip J. Klass,** leading investigator of UFO claims and former senior editor of *Aviation Week and Space Technology*
Robert Young, education director, Harrisburg Astronomical Society
James McGaha, Major, U.S. Air Force (ret.), Tucson, Arizona
Kevin Randle and **Donald R. Schmitt,** authors of *UFO Crash at Roswell*

Session 2. THE PARANORMAL IN CHINA

Moderator: **Paul Kurtz,** CSICOP Chairman and professor emeritus of philosophy at the State University of New York at Buffalo
Guo Zheng-yi, Shen Zhen-yu, Weng Shi-da, and **Dong Guang-bi,** members of the Chinese Association for Science and Technology; **Lin Zixin,** former editor-in-chief of China's *Science and Technology Daily*; **Yu Li,** journalist and magician

6:00 - 7:00 P.M.: Reception (cash bar)

7:00 - 10:00 P.M.: Awards Banquet

Entertainment by **Steve Shaw,** mentalist, magician and "Project Alpha" alumnus

(Continued on next page.)

Sunday, October 18

9:00 A.M. - NOON: Conversation Session

Screening of CSICOP video.

Sunday morning Tour of Dinosaur Valley State Park: See the Paluxy River footprints and the fossil imprints left by giant reptiles of eons past. Dr. Ronnie Hastings, an expert on the Paluxy River footprints, will be our tour guide. The bus will leave at 8 A.M. and arrive back at the Harvey at 1:00 P.M. A complete box lunch will be provided ($31.50 per person)

This conference is hosted by the North Texas Skeptics, an independent, autonomous organization.

Opinions expressed at CSICOP conferences are those of the individual speakers and do not necessarily represent the views of CSICOP.

REGISTRATION FORM

Preregistration is advised. (Students 25 or under with I.D., $25.00. Registration fee does not include meals or accommodations.) Mail to:

1992 CSICOP Conference, P.O. Box 703, Buffalo, New York 14226

☐ YES, I (we) plan to attend the 1992 CSICOP Conference in Dallas.

☐ $125 registration for _____ person(s), includes Keynote Address. $ _____

☐ $15.00 Friday Dinner for _____ person(s) $ _____

☐ $15.00 Saturday Luncheon for _____ person(s) $ _____

☐ $25.00 Saturday Awards Banquet for _____ person(s) $ _____

☐ $10.00 nonregistrant ticket(s) to Keynote Address for _____ person(s) $ _____

☐ $31.50 Tour of Dinosaur Valley State Park and Box Lunch for _____ person(s) $ _____

☐ Charge my ☐ VISA ☐ MasterCard ☐ Check enclosed Total $ _____

Acct. # _____ Exp. _____

Name _____

Address _____

City _____ State _____ Zip _____

Phone: (day) _____ (evening) _____

☐ No, I will not be able to attend the conference, but please accept my contribution (tax-deductible) of $ _____ to help cover the costs of this and future CSICOP events.

Note: The CSICOP Hospitality Room will be open at 5:00 P.M. on Thursday, October 15 (cash bar 7:30 to 11:00 P.M.). This room will be available for the entire conference.

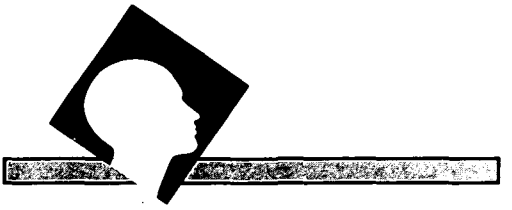
Accommodations: The Harvey Hotel, near the Dallas-Fort Worth Airport, Highway 114 at Esters Blvd., 4545 W. John Carpenter Freeway, Irving, TX 75063. Free parking. **Single $68.00, double $68.00** (plus 11% tax). (The Harvey will arrange shared doubles upon request.) These special rates will be available from October 13 through October 19. For reservations call 214-929-4500, FAX 214-929-0733. Benton's restaurant, Scoop's Diner, Cassidy's Lounge, and the Lobby Bar are on the premises, and the hotel will provide free transportation to Restaurant Row. Complimentary coffee will be available in the lobby for hotel guests.

Transportation: For special conference airline rates call CSICOP's travel agent, Judy Pensack, **Creative Destinations, 800-572-5440** or **FAX 407-830-5530,** who has arranged discounts. **Free transportation** to and from DFW Airport to the Harvey Hotel.

For more information, call or write to Mary Rose Hays at CSICOP, Box 703, Buffalo, New York 14226 / Telephone: 716-636-1425, FAX 716-1733.

Media representatives should contact Barry Karr: 716-636-1425.

News and Comment



Geller Suit Against CSICOP Dismissed

A federal court in Washington, D.C., has thrown out a lawsuit filed by self-proclaimed psychic Uri Geller against the Committee for the Scientific Investigation of Claims of the Paranormal (CSICOP) and has authorized the imposition of monetary sanctions against Geller for prosecuting the case.

In orders issued by Judge Stanley S. Harris, the United States District Court for the District of Columbia, entered judgment on behalf of CSICOP and granted CSICOP's request that the Court impose sanctions on Geller for his prosecution of the lawsuit. Geller commenced the $15-million lawsuit in May 1991 against CSICOP and James Randi, alleging that Geller was defamed by Randi in statements reported in the *International Herald Tribune.* In its motion to the Court seeking judgment on Geller's claims against it, CSICOP asserted that Geller had no legal or factual basis for his assertion that CSICOP should be held liable for Randi's alleged statements.

In a declaration filed with the Court in Geller's lawsuit, CSICOP Executive Director Barry Karr stated: "I believe that CSICOP was made a defendant in this lawsuit solely for the purpose of harassment and intimidation, and in the hope that the lawsuit would dissuade CSICOP from encouraging and providing a forum for . . . the critical discussion and analysis of paranormal claims, particularly those asserted by Geller."

On numerous occasions, the SKEPTICAL INQUIRER has included articles that have examined and commented upon claims of paranormal powers asserted by Geller, many of which have called into question Geller's claims.

Judge Harris's authorization of sanctions against Geller was made pursuant to a federal court rule that mandates the imposition of sanctions if litigation is "interposed for any improper purpose, such as to harass or cause unnecessary delay or needless increase in the cost of litigation," or if papers filed with the court are not "to the best of the signer's knowledge, information, and belief formed after reasonable inquiry . . . well grounded in fact . . . and warranted by existing law or a good faith argument for the extension, modification, or reversal of existing law."

Following notification of Judge Harris's orders, CSICOP Chairman Paul Kurtz commented, "This type of libel suit, even if ultimately unsuccessful, threatens to chill debate on scientific issues. If such obstacles as these are placed, unchecked, in the way of scientific research, and if one cannot question extraordinary claims, then a serious blow will be dealt to freedom of expression and of scientific inquiry." Kurtz continued, "We view this case as a serious challenge to our First Amendment rights, and we are thankful that Judge Harris chose to vindicate those rights." In addition, Kurtz observed, the judge's decision to impose sanctions against Geller

"sends a stern warning to those who would utilize libel suits as a weapon to harass; such conduct can carry a heavy price."

The plaintiff has since filed papers asking the court to overturn the decision, and of course we are now opposing these motions.

Junk Science and the Courts: Not All Bad News

Peter Huber's new book, *Galileo's Revenge: Junk Science in the Courtroom* (see New Books, *SI*, Summer 1992, p. 421), draws a depressing outline of a judicial system unable to control expert testimony in cases of novel scientific evidence and unable to rationally determine cause in product-liability and toxic-tort lawsuits. Huber shows that over the past few decades the courts have abandoned earlier rules of evidence that screened scientific testimony for reliability in favor of a "let it all in" approach that encourages damage suits based on scientifically unfounded or even frivolous theories. Still, the picture isn't entirely bleak. There is a growing reaction against the use of junk science and the hired-gun expert.

An increasing number of legal commentators and judges realize that the rules of evidence have become too lax and that some reform is necessary. An important article by Bert Black (1988) epitomizes this new thinking. Black argues that decisions about the admissibility of scientific evidence should distinguish between validity and reliability. "Validity" means that an expert's conclusions result from sound and cogent reasoning. Validity is thus a scientific question. "Reliability" means that a successful outcome or a correct answer when applying the expert's reasoning is sufficiently probable for a given situation. Reliability is thus partly a legal question: Given a valid method, how certain does the result have to be before we render a judgment affecting lives and fortunes? Courts should not make the question of an expert's qualifications a substitute for examining his reasoning or methodology. What is valid methodology should be determined by the standard of *Frye v. United States:* The methodology and reasoning the expert uses to connect the facts to the conclusions should be generally accepted within the scientific community. *Frye* was decided in 1923 and soon became the accepted standard for scientific testimony in all but medical malpractice cases. The case was not always sensibly applied, but it did give judges some basis for weeding out unfounded scientific opinions.

Some appellate courts are now attempting to devise standards for scientific evidence that take into account the validity of the expert's methods. In *Ealy v. Richardson-Merrell, Inc.*, for example, the court held that an expert witness could not testify that his own unpublished research showed the drug Benedictin caused birth defects, when a wealth of published epidemiological studies showed just the contrary. The court obviously felt that expert reasoning should be based on scientifically valid methods, but it did not explicitly say so, nor did it mention the *Frye* standard.

Black would change the Federal Rules of Evidence (now adopted by most state courts as well) to explicitly require experts to explain the reasoning leading to their conclusions, and then to judge that reasoning against scientific consensus.

The U.S. Fifth Circuit Court of

Appeals in New Orleans recently adopted Black's arguments and read such a requirement into the Federal Rules in *Christophersen v. Allied-Signal Corp.* The Fifth Circuit held that *Frye* is not dead and that the Federal Rules of Evidence must be aligned with the requirement that the expert's reasoning be generally accepted within the scientific community.

Christophersen was a toxic-tort case from a Texas federal district court. The plaintiffs, survivors of a battery-plant worker, claimed that the worker acquired a rare form of cancer from years of intermittent exposure to fumes from nickel-cadmium battery manufacture. The plaintiffs' expert, Dr. Miller, was a medical doctor with experience in cancer treatment, and certainly qualified in the usual sense. The trial court, however, examined Miller's reasoning about how Christophersen's cancer resulted from his exposure. The defendants' experts all maintained that there was no support from epidemiology, live animal testing, or even *in vitro* testing, to show that this type of cancer could result from this particular kind of exposure. Miller conceded that these were the main methodologies accepted by medical science, yet he did not use them in arriving at his conclusion. The court held that Miller's reasoning was nothing more than a "scientific hunch," and thus not admissible. The appellate court affirmed.

This decision effectively overruled several older Fifth Circuit cases that held that questions regarding the scientific bases of an expert's opinion affect ". . . the weight to be assigned that opinion rather than its admissibility and should be left to the jury's consideration." Four judges of the 13 dissented, arguing that the Federal Rules cannot be interpreted to authorize a court to examine methodologies or disapprove an expert's opinion. All the dissenters, in my opinion, overlook the connection between the scientific validity of an expert's reasoning and methodology, and the reliability of his conclusions.

The Supreme Court recently refused to hear the plaintiffs' appeal, so *Christophersen* is the law in the federal Fifth Circuit. One of the defendants' lawyers believes the

Supreme Court declined to rule on the issue, despite its importance, because the Federal Rules of Evidence are undergoing revision. The proposed changes will explicitly require some determination of validity and reliability before scientific evidence is admitted. If the revisions are adopted, all federal judges will have a uniform procedure to follow.

Certainly there is no reason to believe that judges cannot deal with the underlying rationale of scientific testimony merely because most of them do not have scientific training. In cases where the focus is directly on the scientific issue, instead of cause inferred from scientific reasoning, the courts generally do well. Patent litigation is a good example. District and appellate courts routinely examine scientific methods in the most arcane disciplines and reach sound results by analyzing how a scientific expert reasons and how that reasoning fits into the scientific consensus. The Arkansas creationism case, *McLean v. Arkansas Board of Education*, also shows that judges can analyze scientific reasoning if they choose to. Judge Overton's opinion in that case is one of the most lucid and succinct explanations of scientific method and practice to be found anywhere. (It was published in full in *Science*, 215:934-943, Feb. 19, 1982.) There is simply no excuse for tossing disputes about novel scientific evidence into the jury box, where the baffled jurors are not even told explicitly that they are deciding a question of scientific validity, much less given any help to do so.

—*John A. Thomas*

References

Black, Bert. 1988. A unified theory of scientific evidence. *Fordham Law Review*, 56: 597-694.

Christophersen v. Allied-Signal Corp., et al., 939 F.2d 1106 (5th Cir. 1991).

Ealy v. Richardson-Merrell, Inc., 897 F.2d 1159 (D.C. Cir. 1990).

Frye v. United States, 293 F. 1013 (D.C. Cir. 1923).

McLean v. Arkansas Board of Education, 529 F. Supp. 1255 (E.D. Ark. 1982).

John A. Thomas is an attorney with a practice in Grand Prairie, Texas. His undergraduate degree is in physics, and he is former president of the North Texas Skeptics, whose newsletter The Skeptic *published an earlier version of this article.*

Science Is Still Well Regarded in U.S., NSB Report Says

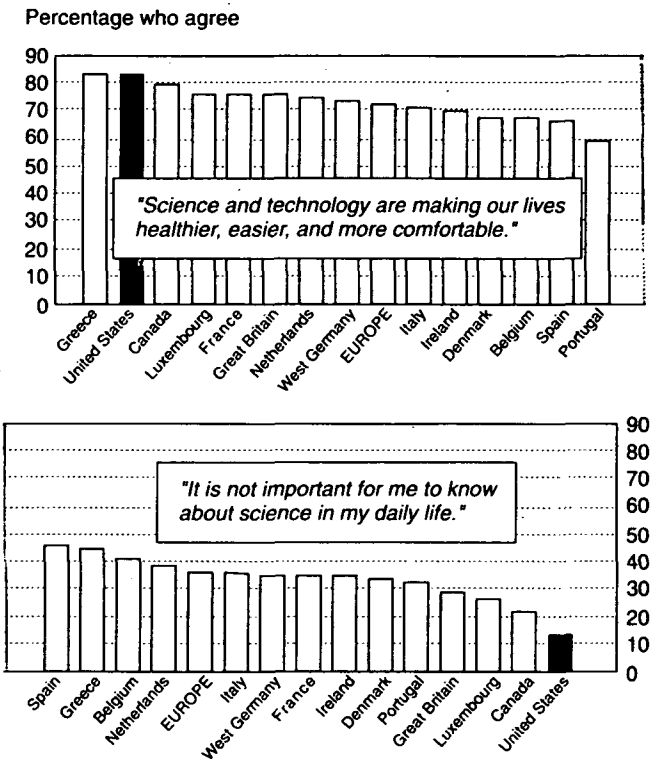
Science has to function within the present climate of increasing public distrust of all institutions, and news reports about technological matters in particular often seem to be negative. Given all that, one might wonder whether the public still holds science in any kind of high esteem.

But take heart, scientists and others concerned about the well-being of science.

The current *Science Indicators*,* a report of the National Science Board, has some generally quite positive news about U.S. public attitudes toward science and technology. The NSB studies also indicate that Americans' attitudes are far more positive than those of Western Europeans. The report has been out for some time now, but some of its conclusions are well worth emphasizing.

Here's a summary:

*National Science Board, *Science & Engineering Indicators—1991*. Washington, D.C.: U.S. Government Printing Office. 1991 (NSB 91-1).



Source: *Science & Engineering Indicators*, 1991

• *Most Americans have a positive attitude about science and technology:* For more than 30 years, at least four out of five American adults have stated that science and technology have a positive effect on their lives.

• *Americans trust the motives of scientists:* Eighty percent agree that most scientists want to make life better for the average person.

• *Americans support federal funding of basic research.* Eighty percent agree with the proposition that even if it brings no immediate benefits, basic scientific research should be supported by the federal government.

The value of education is also recognized:

• *The U.S. public sees strong links between education, advancements in science, and U.S. economic competitiveness:* Seventy-five percent of the public feels that if more Americans could obtain a college degree, "big improvements" would result in science, medicine, and technology; 59 percent predict big improvements in U.S. economic competitiveness.

While the news is generally positive, it is not uniformly so. Attitudes toward space exploration have become less positive.

• *Assessments of space exploration are changing, and in a negative direction:* Between 1985 and 1990, the proportion of Americans who felt that the costs of the space program exceeded its benefits increased from 38 to 47

percent.

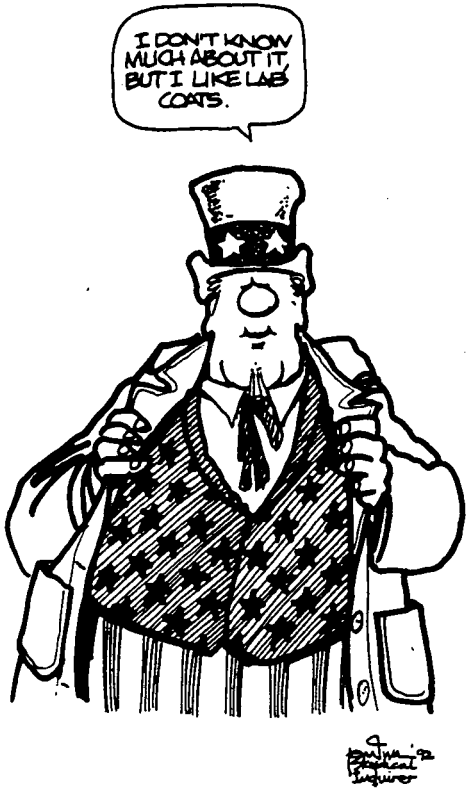
And animal research is less readily accepted:

• *Fewer Americans now approve of using large animals in scientific research:* Between 1985 and 1990, the percentage who approved of research causing pain to animals like dogs and chimpanzees—even if it results in new knowledge about human health—fell from 63 to 50 percent.

And people are troubled about education:

• *Americans are increasingly concerned about the quality of science and mathematics education:* Since 1985, the percentage of adults who agree that science and mathematics education in U.S. schools is inadequate has risen from 63 to 72 percent.

Here is how the NSB report summarizes a broad range of studies about the public's attitudes toward science and technology:



"A substantial majority of Americans value scientific research, and they perceive a strong link between advances in science and technology and improvements in their daily lives. Even if they are unsure about the actual processes of scientific work, Americans are positive about the institutions of science, about scientists, and about government support for research.

"American optimism about science stands out among the industrialized countries; compared with Canada, Japan, and the nations of Western Europe, the United States scores high on a set of indicators of public confidence in science."

The U.S. survey data are largely from surveys by researcher Jon D. Miller.

This was the first *Science Indicators* report to include comparisons with similar surveys in 15 other countries. One question gave respondents a chance to express a negative view about the value of science: "It is not important to me to know about science in my daily life." Only about 12 percent of U.S. respondents agreed; in every other country more than 20 percent agreed (from more than 40 percent in Spain, Greece, and Belgium, down to 21 percent in Canada).

All this is despite the generally poor knowledge about scientific concepts on the part of the American public, which could certainly be troubling for the future.

"The U.S. public has maintained its strong support for science while remaining unaware of basic scientific concepts about the natural world. Most adults are not conversant with the broad scientific questions underlying a number of contemporary public policy issues. They often reject scientific explanations that disagree

with other beliefs, and their otherwise strong support for science is more equivocal when scientific and moral questions conflict.

"Americans are increasingly concerned about the quality of education in the United States and overwhelmingly favor more training in science and mathematics."

Some caveats and concerns: Although the report was published early this year, the U.S. surveys for this report were conducted in September and October 1990. It will be interesting to see whether the next biennial *Science Indicators* report shows the same degree of positive attitudes toward science, or whether the generally heightened negativism prevalent this year toward other institutions (Congress, for example) will rub off on science as well. In addition, science as an institution has had plenty of bad publicity itself in the past year (several significant science fraud cases, scandals over misuse of federal funds at several universities, and serious problems with several expensive space experiments have all been in the public eye), so much so that last August *Time* produced a cover story, "Science Under Siege."

So while science may have been held in generally high esteem in the U.S., the question is, will it remain so?

—*K.F.*

Francis Huxley's Alternative View of the Universe

Are science and skepticism unnecessarily limited in their approach to the phenomena of the world? Are skeptics afraid of other ideas, of other methods, of considering information that does not conform to scientific methodology? Should skeptics seriously consider evidence that rests wholly on personal experience, trusting to the truth of the teller or to one's own senses?

Francis Huxley, a member of the famous British Huxley family, raised these questions when he spoke to the New Mexicans for Science and Reason (NMSR) at a special meeting in Santa Fe. In a most amusing presentation, Huxley gave forth with numerous anecdotes concerning various experiences and people in his life, all of which confirm to him that science is foolishly limited. In essence, he said, although an experience may not be repeatable, it is verifiable, and one should give paranormal experiences credence. Is an experience, then, as important as a replicable experiment?

Although Huxley does not claim to speak for the entire New Age movement, it is this attitude that informs it: science is harsh, forbidding, cold, afraid of new ideas that undermine its edifice and its prestige, and is limited to gray experimentation. Contrarily, we all have experiences that seem beyond explanation. We should rely on our perceptions and experiences as a source of valid information.

This is the challenge set out before skeptics today; that night, it was presented by Huxley.

Huxley's talk came about through a challenge issued by his wife, Adele Getty, in *The Sun*, a New Age monthly published in Santa Fe. With the cooperation of St. John's College, NMSR accepted the challenge of an exchange of views so that each group might learn something of the interests and concerns of the other. It is difficult, however, to describe Huxley's talk in any detail.

Huxley has a genius for presentation. He has a sonorous voice, a calm,

yet lively, dignified, elegant manner, and he presents himself and his stories with humor and dispatch. What it all amounted to is a different question. The substance of the talk, its center, was never defined. One must infer it from what was said and not said. The talk was, then, an entertaining set of anecdotes just basted together.

Huxley is the great-grandson of T. H. Huxley, "Darwin's Bulldog," the son of Julian, and the nephew of Aldous. He has a B.S. and an M.A. from Oxford and has been assistant curator of the Liverpool Museum. He is the cofounder of Survival International. Given this background, Huxley does support the SKEPTICAL INQUIRER in its efforts to root our charlatans, but he dislikes its animus against believers.

Quoting Pyrrho, the 4th century B.C. philosopher, he said that, since one cannot reconcile differing opinions about the world, one should hold one's mind in suspense, in divine rest. He spoke of skeptical doubt of such phenomena as extrasensory perception: that they can be explained through coincidence and chance, that the results of tests have been twisted by cheating on statistics. He noted that Samual T. Gill criticizes phenomena that disappear when doubted and that skeptics believe we can communicate through the five senses only.

In contrast, Huxley presents himself as a "natural historian"; his case was built on anecdotes, including his own. Many examples followed. One took place upon a night when he awoke for no particular reason, dressed, went outside, and then to a house two doors down, to the basement apartment where, going in through the window, he found a friend suffocating in bed and so saved her life. He has no doubts about that night, but he also had no reason to do as he did.

He was acquainted with a woman, Rosiland Heyward, who had written several books on ESP for the Society for Psychical Research, a British group of long standing. She was married to a colonel who enjoyed great success dowsing for oil in Arabia. Heyward related that when she received a psychic message, she considered it an order. On the more familial level, she and her husband communicated psychically on a regular basis, calling each other when needed from remote parts of the house and from more distant places during the war, when telephones were unavailable. According to Huxley, the couple were happy to demonstrate their powers to others, including members of the Society for Psychical Research.

In reference to other paranormal phenomena, Huxley spoke positively of the I-Ching's being useful because it is self-reflective and thus causes the reader to be the same, which, one should note, is exactly what the SKEPTICAL INQUIRER had to say about astrology and why it is it seems to work.

Further on and farther out, Huxley spoke of his admiration for a Brazilian psychic surgeon who is able to predict who will faint during his audiences. He is then decent enough to cure them. During an operation Huxley observed, the surgeon drew out congealed ectoplasm, after which the patient was cured. The most dramatic event came when the surgeon painfully pushed a drinking glass into Huxley's sternum to take away his energy and use it to revivify a dying man. Huxley fainted from the pain, but the dying man recovered. Mind over matter, Huxley observed. Equally impressive, this same surgeon channeled Nero with an exactness that rivaled Suetonius.

As his account went on, Huxley proclaimed doubt about a few phe-

nomena. He views ESP card-guessing tests as boring and ludicrous, with the odds millions to one. Any ESP that exists will fade with the increasing boredom. Chance governs some phenomena, such as the idea that given enough monkeys attached to typewriters, one will eventually type out Shakespeare's *Hamlet*. Both this and the Hundredth Monkey hypothesis he views as absurd. Huxley is also dubious of more mundane questions, such as elements of psychology and the Jungian theory of the unconscious.

In the end, he said that skepticism should be alternated with belief and that it is better to be a fool than a knave. What you do has a consequence, he stated, even if it is not replicable.

As a counterpoint to Huxley's presentation, NMSR's chairman, John Geohegan, presented the skeptics' viewpoint. He said skeptics follow certain rules, the first being testing, i.e., Don't take anybody's word for it. Show me, he said. People like the Maharishi are unconvincing because they refuse to demonstrate their claims. Give me enough information to repeat the experiment, but I do not accept the concept that I do not need to explain the phenomenon. Using a double-blind technique, so that the experimenter cannot fudge the results, is important; as is falsifiability—the possibility of proving claims to be false. Last, he said, science says nothing about moral principles, nor does it deny the supernatural; for the latter, there is merely no evidence.

Clearly, what most troubled Geohegan is that New Agers may not understand the scientific concepts and facts they attack, and thus threaten not only to ignore but to deny them and thus discard a vast area of human endeavor, a treasure-trove of information. If one wishes to overturn old rules, one must understand how much is at stake and how difficult it is to prove asserted new phenomena. There are ages of accumulated evidence, a heritage that should not be thrown out lightly. Imagination is terrific, but then comes testing. Such testing often shows the coincidences and anecdotes of Huxley and his peers to be meaningless. Thus one should consider it significant that in more than 100 years of testing there has not been *one* repeatable demonstration of a paranormal power.

There were areas of agreement. As to the assertion that science is a way to keep from being "ripped off," both Huxley and Geohegan were able to agree that they don't like being humbugged, although Huxley believes skeptics can humbug themselves out of "moments."

In the end, Huxley reaffirmed his belief that one must not scorn anecdotes; one must not limit awareness but keep the doors of perception open. He tells of what happens in the "living moment," the interpersonal; he lives the moment to the fullest. Thus one can make use of the experiences of life. Do not explain experience, he enjoins us, *use* it.

Thus we are left with these two ways of viewing the experience of life: explain the marvelous so it can be harnessed, use the marvelous whether it can be explained or not. One suspects further debate is necessary.

—John Pen La Farge

John Pen La Farge is a writer, editor, and historian in Santa Fe, New Mexico. This is a slightly different version of an article he wrote for the newsletter of New Mexicans for Science and Reason, the Enchanted Skeptic, *of which he is the editor.*

A Little Bit of Heaven At Massachusetts Angel Conference

They didn't watch "Angel on My Shoulder," sing "You Are My Special Angel," or dine on angel food cake, but the 60 people who paid at least $200 each to attend the May 29-31 American Conference on Angels said they had a heavenly time meditating, dancing, and making various offerings to their guardian angels, hoping to learn how to communicate with them.

The driving force behind the meeting in North Falmouth, Massachusetts, was Karyn Martin-Kuri, an artist who claims she has been able to see and psychically converse with angels because the heavens open up to her, and she saw millions of angels as a child.

Her organization, Tapestry, even has a toll-free number (1-800-28-ANGEL). You can therefore call Martin-Kuri and she can tell you what your guardian angel has wanted to tell you but you've been too out-of-touch to hear.

An "Angelic Consultation" costs $50 for a half-hour or $75 for an hour and, based on the sampling she gave me, sounds suspiciously like a cold reading, a technique psychics use to make you think they know all about you. Martin-Kuri said she can get information from the caller's guardian angel because, she says, "the phone is just an illusion."

The conference coincided with a May 12 front-page article on guardian angels in the *Wall Street Journal*, which chronicled how angelology and angel-related products are becoming popular.

Martin-Kuri and her supporters want to work with angels to "infuse our culture with more kindness and compassion without pushing our will on others."

But for skeptics who want to know more about angels themselves, here's the lowdown:

- Everyone has at least one guardian angel, even skeptics. My wife, it turns out, has two (one was standing behind and to the left of her, according to Martin-Kuri).
- Angels can't see objects, except through the perceptions of the person they're serving. An angel only sees people as energy, and they are drawn to "positive" people the way a moth is drawn to a flame.
- There are "dark" angels. They influence dark, dense, negative, and materialistic people. "They're very painful to be around," she said. "Only my compassion allows that."
- Angels need offerings and other signs of goodwill to thrive. Such offerings can be any work of art—poem, play, dance, sculpture, or piece of needlework—created on their behalf.
- Evil people apparently do a better job than the rest of us at ignoring the whisperings of their guardian angels. Take Saddam Hussein. "We've been working with his guardian angel for some time," Martin-Kuri said. "You can ask your guardian angel to work with his guardian angel" in hopes of getting him to listen. "It's an indirect system."
- Angels may take human form or move objects. "Angels can go into the body of a person to stop a train or to lift a truck off a child with extraordinary strength," she said.
- Some people who are reincarnated get tutoring from the archangel Michael before they begin their next existence. The schooling is a special program set up by Michael during his current 200- to 300-year reign as

super archangel.

Most people at the North Falmouth conference seemed anxious to get better access to the angelic realm.

Margerite Abramo of Stony Brook, Long Island, was delighted when she went to sleep the first night of the conference and was told in a dream that her guardian angel's name is Ahvid. "I was so afraid my guardian angel's name would be Harry or Irving."

A quick way to show that angels exist would be for you to ask Martin-Kuri the name of a playing card you've just selected. Your guardian angel (who senses the card through you) can relay the card to her over the phone. But, as she explained before the conference, "We're not interested in convincing anyone."

Martin-Kuri said people who know about angels are never alone. When they're walking down an empty corridor, they often smile as though they are amid a crowd of happy people. But they don't walk along the side of the corridor to physically make room for the heavenly spirits, she said. "That's what they do in mental hospitals."

—*C. Eugene Emery Jr.*

Gene Emery is a science writer for the Providence Journal.

Asimov on Software Now, On a Stamp in 2002?

Many distinguished scientists and writers present personal remarks in this issue about the influence Isaac Asimov had on their lives, his phenomenal output of explanatory science writing and science fiction, and his role as a steadfast champion of science and reason. We were pleased to provide a forum for them to express their feelings and to honor Isaac. Some of their recollections are quite touching.

At the end of his comment, Martin Gardner suggests that the U.S. Postal Service should begin to consider a commemorative stamp to honor Asimov. He's not alone. *San Francisco Examiner* science writer Keay Davidson (a recipient of CSICOP's 1991 Responsibility in Journalism award), in his syndicated "Mr. Science Guy" column, relates the suggestion from a California reader that we all start a movement to get Asimov's visage on a stamp. If Elvis Presley deserves a stamp, "then why not Asimov, whose writings inspired and educated generations of scientists and technologists." Says Davidson, "As a lifelong Asimovian, I agree 100 percent. I call upon my readers to write the U.S. Postal Service and demand that Asimov get his own stamp."

He gives the address, and here it is, for the benefit of SKEPTICAL INQUIRER readers who might also want to write: Norma Arroyo, Citizens Stamp Advisory Committee, 475 l'Enfant Plaza SW, Room 4474-3, Washington, DC 20260-6753. Please note that no one (except former presidents) can be honored with a stamp until 10 years after his or her death. As part of the homework of anyone seriously interested in this stamp movement, read James A. Michener's fascinating anecdotes about his turbulent service on the citizens stamp commission, on pages 218-225 of his memoir, *The World Is My Home* (discussed in our Summer 1992 issue).

Isaac Asimov's books will be around forever. Shortly before his death, however, he participated in his first-ever software program, called *Science Adventure.* It was announced May 4 by Knowledge Adventure, Inc., an

educational software publisher specializing in disk-based multimedia "interactive books." Because it was written by Asimov, company vice president Steve Chadima thought *SI* readers would want to know of *Science Adventure*, subtitled "Discoveries That Changed the World." The company says it combines Asimov's text "with stunning, photographic-quality images and digitized sound in a unique format" that can be used on the average home or school PC. For further information contact the company at 4502 Dyer St., La Crescenta, CA 91214.

—*Kendrick Frazier*

Paul Kurtz Elected Fellow of AAAS

CSICOP founder and chairman Paul Kurtz, professor emeritus of philosophy at the State University of New York at Buffalo, was elected a Fellow of the American Association for the Advancement of Science during the February meeting of the AAAS Council.

AAAS Fellows are those members "whose efforts on behalf of the advancement of science or its applications are scientifically and socially distinguished." Kurtz was cited "for research, publications, service to the profession, and communicating and interpreting science to the public," according to AAAS executive officer Richard S. Nicholson. Introducing the listing of new Fellows, *Science* magazine (published by the AAAS), said Fellows' accomplishments "often span decades of distinguished efforts on behalf of science" (255:1726).

For the Record

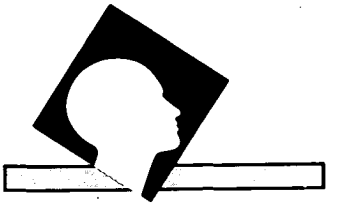
In Robert E. McGrath's review of T. M. Luhrman's *Persuasion of the Witch's Craft* (*SI*, Spring 1992), the copy editor made an incorrect assumption, twice replacing McGrath's "T. M. Luhrman" with "he." Our apologies to Tanya M. Luhrman.

In the latest list of newspapers that carry astrology disclaimers (Spring 1992, p. 235), we wrongly placed the *Tupelo Daily Journal* in Michigan rather than Mississippi. Also, the newspaper is now the *Northeast Mississippi Daily Journal*, Tupelo, Miss. Several more newspapers that carry disclaimers have been brought to our attention and will be listed the next time we publish a full update.

At the end of Milton A. Rothman's article *Two 19th-Century Skeptics* (Spring 1992), the date of Fiske's *A Century of Science and Other Essays* was moved forward nearly a century by typographical transposition from the correct 1899 to 1989.

There was an error in the inclusive page numbers we gave for the paper by R. A. McConnell and T. K. Clark that was the subject of our News and Comment article about NAS members' attitudes toward parapsychology (Spring 1992). The correct reference is *Journal of the American Society for Psychical Research*, 85:333-365, October 1991. □

Notes of a Fringe-Watcher



MARTIN GARDNER

Marianne Williamson and 'A Course in Miracles'

Shirley MacLaine, top New Age showbiz guru, has been shoved aside by a new woman on the block, Marianne Williamson. For several years now Williamson has been preaching up a storm about a massive *Course in Miracles,* said to have been dictated by none other than Jesus himself. Let's start at the beginning.

Helen Cohen Schucman (1909-1981) was a psychologist on the staff of the psychiatry department of Columbia University's College of Physicians and Surgeons. In the same department was William N. Thetford. In her middle years Schucman became Thetford's assistant at New York City's Presbyterian Hospital, where he headed the psychology department.

They were an unlikely pair. Thetford, a tall, handsome bachelor, was 14 years younger than Schucman. She was short, slight, and a professed atheist. Suddenly in 1965 a strange thing happened. A silent "inner voice" commanded her to take notes for a "course in miracles." For almost eight years (1965 to 1973) the Voice dictated at intervals. It was not automatic writing, because Helen was always wide awake. If a phone call interrupted the channeling, the Voice would stop and later take up where it had left off.

An "inner voice" commanded Helen Schucman to take notes on a "course in miracles."

Totally stunned, Schucman did not even believe the statements she was scribbling in her shorthand notebooks. When she finally confided to her boss what was happening, he advised her to keep scribbling. Her husband, Louis Schucman, who ran a bookstore in Manhattan, seems also to have been sympathetic. Thetford, previously an agnostic, became so intrigued that he began an intensive study of mysticism and world religions.

Schucman would read her notes aloud and Thetford would type them. There is some dispute over how much the channeled material was edited. Thetford claimed such changes were

minor. From time to time they would ask the Voice questions. Eventually a three-part manuscript was produced. Until her death at 71, Helen refused to be identified as the channeler. Since then Thetford has also died.

Enter Judith Skutch, then the wife of Robert Skutch, a New York stockbroker and former writer of television commercials. Born in Brooklyn of Jewish parents, Judy Skutch became extremely active in psychic circles. Her Foundation for Parapsychology Investigation helped fund Stanford Research Institute's research on Uri Geller. She became known as "parapsychology's den mother." When she began to read Helen Schucman's channeled manuscript she was floored, like Paul on the road to Damascus. Abandoning her activities in parapsychology (she had taught the topic at New York University) Skutch decided to devote all her energies to getting *A Course in Miracles* into print. Her organization was renamed the Foundation for Inner Peace, now located in Tiburon, California.

Reed Erickson, an American industrialist living in Mexico, shelled out $60,000 for the *Course*'s first printing of 300 copies—a photocopy of the typescript published in 1975 under the imprint of Freeperson Press, San Francisco. The next year Judy's foundation printed 5,000 copies in a hardcover set of three blue-bound volumes, a total of 1,188 pages. Volume 1, 622 pages, is the *Course*. Volume 2, *Workbook for Students*, is 478 pages and describes an exercise for each day of the year. Volume 3, *Manual for Teachers*, 88 pages, further explicates the *Course*. The set has now sold hundreds of thousands of copies.

Judy Skutch decided to devote all her energies to getting *A Course in Miracles* into print.

The *Course* quickly acquired ardent disciples. Psychologist Kenneth A. Wapnick, a Jewish convert to Roman Catholicism, has dedicated his life to spreading the new revelation. His Foundation for a Course in Miracles, in Roscoe, New York, has published six books in which he struggles to harmonize the *Course* with Christian doctrine.

The *Course* has spawned a dozen other books and more than a thousand study groups here and abroad. Thetford coedited *Choose Once Again*, a book of selections from the *Course*. Robert Skutch's *Journey Without Distance* is a history of the *Course*. His *Messages from My Higher Self* was, he claims, produced by automatic writing while meditating.

Centerlink issued a disk version of the *Course*. Steven Halpern, a New Age pianist, set passages from the *Course* to music. Miracle Distribution Center put Halpern's songs on audiotape, and Beverly Hutchinson, who also lectures on the *Course*, is the vocalist. An ad says the songs are "like jewels set in a background of velvet." A wag named Michael Stillwater wrote a small handbook for gardeners titled *A Course in Marigolds*, published by the Foundation for Dinner Peas.

Like Mary Baker Eddy, Helen Schucman wrote reams of forgettable verse. Judy Skutch issued a posthu-

mous selection of Schucman's poems in a book titled *The Gifts of God.* The poems read as if they were written by the author of *A Course in Miracles.*

Before their divorce, the Skutches had four children. A daughter, who is now Tamara ("Tammy") Cohen, had exhibited as a child what her parents took to be strong psi powers. In 1985, Cohen and her mother collaborated on *Double Vision,* a book in which each gives an account of her psychic adventures. Judy Skutch now lives in Belvedere, California, with her new husband, retired Army officer William Whitsun.

The *Course* had a profound impact on many notables in psi circles. Willis Harmon, who heads the Institute of Noetics, called it "the most important book in the English language." Glen Olds, former president of Kent State University, was similarly smitten. A raft of top parapsychologists praised the book and testified that its exercises had cured their ulcers and other ailments. Other prominent New Agers were not so impressed. The Esalen Institute's cofounder, Michael Murphy, had this to say:

> But there's much more of Helen in the *Course* than I first thought. She was brought up mystically inclined. At four she used to stand out on the balcony and say that God would give her a sign of miracles to let her know that he was there. Many ideas from the *Course* came from the new thought or metaphysical schools she had been influenced by.

Psychiatrist Gerald Jampolsky was a distinguished convert. The *Course* banished his agony after a divorce and cured his alcoholism and back pain. Well known for his work with terminally ill children, Jampolsky has written about the *Course* in books with such titles as *There Is a Rainbow Behind Every Cloud, Love Is Letting Go of Fear, Teach Only Love, Goodbye to Guilt,* and *Children as Teachers of Peace.*

It is hard to believe that intelligent people could take seriously a work that is little more than a crude rehash of ideas from the old New Thought movement, which generated a vast literature about a century ago. Initiated by an amusing quack, Phineas Parkhurst Quimby, the movement sprouted into a variety of religions, of which the most successful were Christian Science and Unity.

Like New Thought, which rang all the changes of today's New Age, including psi phenomena and reincarnation, the *Course* swarms with Christian terminology, but uses it in Pickwickian ways. "Atonement," for example, is not the blood atonement of Jesus. It means "at-one-ment," the unity of each of us with everyone else and with God. Acceptance of this "at-one-ment" is the equivalent of Christian conversion and rebirth.

Central to the *Course* is the Hindu notion that time and the physical world are maya, or illusions. The sole reality is Love, which is the same as God. Here is how the *Course* sums itself up in its brief introduction: "Nothing real can be threatened. Nothing unreal exists. Herein lies the peace of God."

The opposite of love, we are told, is not hate but fear. All our major decisions are choices between those two emotions. We can't fear if we love. We can't love if we fear. What everyone else calls sin and guilt do not exist. The course puts it bluntly: "There is no sin," and "evil does not exist." Sin is merely false thinking and perception. We can be mistaken, but in God's eyes we are all guiltless. Even Judas did not sin, Schucman was told. Sin, evil, sickness, even death, are illusions arising from an absence of love, as darkness is the absence of light.

Here is how Mary Baker Eddy said

the same thing in her book *Retrospection and Introspection:*

> [Christian] Science saith to Fear: "You are the cause of all sickness; but you are a self-constituted falsity,—you are darkness, nothingness. . . . You do not exist, and have no right to exist, for 'perfect love casteth out fear.' " . . . A demonstration of the unreality of evil destroys evil.

Like so many other New Agers, Thetford likened the unreality of the world to the solipsism that tinges quantum mechanics. "Somehow," he said in an interview, "we are perceiving something that isn't there, and it is our perception of it which gives it reality." As Shirley MacLaine likes to say, we create our own reality.

Forgiveness is another basic concept of the *Course.* Once we experience atonement, cast out fear, and love one another and God, we automatically forgive ourselves and others. Well, not really, because there is nothing to forgive!

The *Course*'s "miracles" are not miracles in the biblical sense of violations of natural laws. They are simply "shifts in perception" that cast out fear. However, a disturbing line in the *Course* reads: "Miracles enable you to heal the sick and raise the dead because you made sickness and death yourself, and can therefore abolish both." I'm not sure just what that means. Like Christian Science, the *Course* abolishes evil only by redefining it. As an illusion, pain still remains. An old limerick puts it crisply:

> There was a faith-healer named Neil
> Who said, "Although pain isn't real,
> When I sit on a pin
> And it punctures my skin,
> I dislike what I fancy I feel."

As did New Thought, the *Course* places enormous stress on right thinking—eliminating the negative, accentuating the positive. Its admonitions, however, are expressed in such vapid clichés that they make Norman Vincent Peale and Robert Schuller seem like profound philosophers.

Enter Marianne Williamson. Like Schucman, she comes from a Jewish background. She is 39, a small, fragile brunette, who was born in Houston, where her father is a wealthy lawyer. A college dropout, she became mired in a series of unhappy love affairs, alcohol and drug abuse, a nervous breakdown, and endless sessions with therapists. She speaks candidly of her "wild" youth and "angry left-wing" opinions. Reading the *Course,* she says, was her "path out of hell."

Williamson's fervent preaching—she has the rapid-fire delivery of a televangelist—soon attracted so many followers that *Time* (July 29, 1991) and *Newsweek* (March 30, 1992) each devoted a full page to her growing fame. This year HarperCollins published her book *A Return to Love: Reflections on the Principles of A Course in Miracles.* After Oprah Winfrey said she had given away a thousand copies, the book jumped to the top of the *New York Times* "How-to" best-seller list.

Williamson lives in West Hollywood as a single mother with her baby daughter India Emmaline. In addition to lecturing regularly in Los Angeles and Manhattan, she has founded a Center for Living in both cities to help victims of AIDS and other serious diseases. A project of the Los Angeles Center, called "Angel Food," provides meals for victims of AIDS. It is supported by such Hollywood luminaries as Shirley MacLaine, Bette Midler, Richard Gere, and Meryl Streep. Although not an ordained minister, Williamson likes to "officiate" at marriages and funerals. It was she who officiated at Elizabeth Tay-

lor's recent marriage to Larry Fortensky.

Williamson's theme song is "What the world needs now is love, sweet love." The word *love* must appear in her book more than a thousand times, in such sentences as "We are all part of a vast sea of love. . . . Love is a win-mode. . . . Only love is real. Nothing else actually exists. . . . Love is to people what water is to plants."

Here are some more gems of Marianne's mushy metaphysics: "We are pregnant with possibilities. . . . Nothing occurs outside our minds. . . . If God is seen as electricity, then we are his lamps. . . . Gray clouds never last forever. The blue sky does. . . . Time does not exist. . . . We're always perfect. We can't not be. . . . Sickness is an illusion and does not actually exist."

"Jesus saves," Williamson tells us, does not mean he rescues us from perdition. It means "Love heals the mind. The leper was healed by Jesus because 'Jesus did not *believe* in leprosy.' "

Some converts to the *Course* are loath to admit that the Voice was the voice of Jesus, but passages in the *Course* make this clear, and Helen Schucman was openly frank about it. She spoke of how disturbed she had been when the Voice first identified itself "in no uncertain terms." One reason she gave for remaining anonymous was so "the true author, Jesus," would always be the *Course*'s "sole inspirational figure."

Williamson also assumes that the Voice came from Jesus, but she adds that "Jesus" is merely a metaphor for the love inside us, not a "person." When *Time* and *Newsweek* ran their articles about Williamson, neither had the courage to name Jesus as the *Course*'s author. I sent *Time* a letter asking why, which was not published; but I received a surprising letter from an editor saying that, although they were aware that Schucman claimed Jesus as the author, "space limitations" prevented them from mentioning it.

More amusing is the fact that no article I've yet seen about the *Course* reveals that Jesus once dictated instructions to Schucman on how to construct an electronic machine that would heal sickness. Because only love can heal, I assume the machine would heal through the love of those who manufactured it. Robert Skutch, in his history of the *Course*, says that the description of the device was shown to several "eminent scientists." Unfortunately, none was able to understand it.

What about reincarnation? Like the *Course*, Williamson waffles. Death is unreal because when our bodies die, our spirit indeed lives on. It is like removing an old suit of clothes, she writes, or like a book that never ends. "The end of our physical incarnation is like the end of a chapter, on some level setting up the beginning of another."

Again: "We have been alive forever. We will be alive forever more."

Does this mean previous and future lives on earth? Williamson is vague. She quotes the *Course* as saying, "Reincarnation cannot, then, be true in any real sense." Why? "Because there is no linear time. If we have past lives, or future lives, then they're all happening at once." This is mystifying. Physicists like to define time as that which keeps everything from happening at once. Can you imagine "living" in a timeless world where everything happens at once?

"Heaven is here," says the *Course*. "There is nowhere else. Here is now. There is no other time." Again: "Heaven is not a place. . . . It is merely the awareness of perfect oneness, and the knowledge that there is nothing else; nothing outside this awareness, and nothing within."

On the other hand, Williamson can write, "Angels are the thoughts of God and in Heaven you will think like angels."* Can you conceive of "thinking" without time, and in a place that is not a place?

One can be a deep student of the *Course*, Williamson says, and either believe or not believe in reincarnation. Whether she believes it the way Shirley MacLaine does is hard to know. At any rate, we are mercifully spared details about Williamson's previous incarnations.

However, like MacLaine, Williamson is aware of her good looks, humor, and charisma. Like MacLaine, she enjoys tossing around four-letter words. Like MacLaine, she is self-absorbed and relishing her glitzy fame. Like MacLaine, she is forever recalling episodes in her past, as if (for instance) anyone cares to know she was once strongly attracted to a gay man.

In recent months she seems to have forgotten the *Course*'s lessons. The *New York Post* (February 25, 1992) headed its Page Six column: "Top-Selling Guru Trashed as Tyrant." The column pictures Williamson as "becoming a power sponge: abusing subordinates, throwing temper tantrums, and forcing out highly connected board members who've brought in celebrities and millions of dollars to her work."

At one party, says the *Post*, Williamson "pitched a hissy" because the host asked Shirley MacLaine to give the fundraising speech instead of her. Also according to the *Post*, she told a talent manager "to go f--- himself because she wasn't properly introduced to Dolly Parton. She seems to be on a major power trip. She's gotten rid of everyone who disagrees with her."

Williamson is quoted as saying: "I should be allowed those reactions. I'm

*In her mystifying "glossary" at the close of *Science and Health*, Mary Baker Eddy defined "Angels" as "God's thoughts passing to man."

not perfect." Not perfect? Doesn't the *Course* say everyone is perfect?

Williamson has called herself "a bitch for God." Powerful Hollywood people, reports Page Six, "are saying the description is two words too long."

Will the sexy little guru rediscover love, sweet love? And will her followers, along with other disciples of the *Course*, ever succeed in plugging the holes in their heads?

On May 22, 1992, the *New York Post* reported that Random House, offering an advance in the millions, had signed Williamson for two more books: *On Women* and *The Healing of America*. Jacqueline Onassis, a Doubleday senior editor, wined and dined Williamson, but Random House got the contract. □

Skeptical Briefs

Newsletter of the Committee for the Scientific Investigation of Claims of the Paranormal

Earthquake Lights and UFOs

UFOs originate closer to home, scientist claims

Earth-shaking!

Contents

Articles

Earthquake Lights and UFOs 1

Skeptics Organize in Hungary, Host Randi 1

Barry Karr 1

Departments

Inside CSICOP ..... 4 Beyond Belief 10

Round Table ..... 5 Inklings 11

Subscription Report 8

Skeptics Organize in Hungary, Host Randi

Barry Karr

See Hungary, page 2

The CSICOP Newsletter

Skeptical Briefs is the quarterly newsletter of the Committee for the Scientific Investigation of Claims of the Paranormal, published to inform skeptics about CSICOP activities and the pursuits of independent local and other national skeptics organizations.

You'll find many new features in **Skeptical Briefs,** including the following regular columns:

Barrett's Corner, by Stephen Barrett, M.D., editor of *Nutrition Forum* and cochairman of CSICOP's Paranormal Health Claims Subcommittee.

A Skeptic's Notebook, by Robert A. Baker, professor emeritus of psychology at the University of Kentucky and CSICOP Fellow.

Reality Check, by Milton Rothman, physicist, CSICOP Consultant, and author of *A Physicist's Guide to Skepticism* and many other science books.

Beyond Belief, by Tom Flynn, electronic media expert and director of Inquiry Media Productions.

Inklings, by U.K. science-writer Lewis Jones.

Skeptical Briefs brings you CSICOP news and views not often found in the SKEPTICAL INQUIRER. (Published quarterly, in February, May, August, and November.)

— — — — — — — — — — — —

Fill out this coupon and send it with your payment to: **Skeptical Briefs, P.O. Box 229, Buffalo, NY 14215-0229**

□ *1 yr. $15* □ *2 yrs. $28* □ *3 yrs. $35*

□ Check enclosed

□ *Charge my* □ VISA □ MasterCard

#_____

Exp. _____

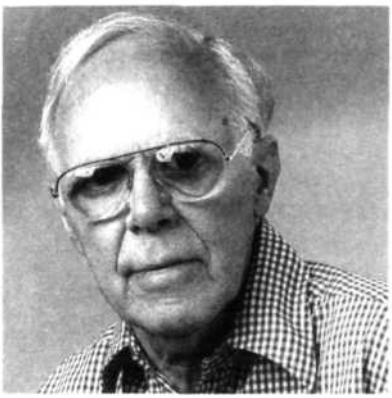
Name _____

Address _____

City _____

State _____ Zip _____

You Can Help Build the Center for Inquiry



Martin Gardner and Steve Allen co-chair the Center for Inquiry fund-raising campaign.

Science commentator Martin Gardner and author-humorist Steve Allen, co-chairs of the Center for Inquiry Capital Fund Drive, will lead an expanding fund-raising effort, now under way. Its aim is not only to raise the funds required to complete Phase II of CSICOP's headquarters, but also to create an Endowment Fund whose income can be used in part to defray operating and maintenance costs of the new headquarters in perpetuity and to enrich all our programs.

Martin Gardner, the author of numerous books, wrote the long-running "Mathematical Games" column in *Scientific American* for many years and is a longtime contributor to *SI*.

Steve Allen is an author, humorist, musician, and television personality who created public television's *Meeting of Minds* series. His recent book *Dumbth: And 81 Ways to Make Americans Smarter* focused on America's crisis in critical thinking.

In 1991, CSICOP and the SKEPTICAL INQUIRER moved many of its offices and production facilities to a new 5,700-square-foot building near the State University of New York at Buffalo/Amherst campus. By conducting this Phase I project in cooperation with the Council for Democratic and Secular Humanism (CODESH), publisher of *Free Inquiry* magazine, and thanks to the generosity of our readers, CSICOP was able to pay almost all of its share of the costs.

Phase I was never designed to house back-issue storage, our mail center, and audio-visual facilities—most of which remains seven miles away in a decaying urban neighborhood. Moreover, our new headquarters has space for only the most recent literature in CSICOP's library collection. Finally, it provides no room for our increasing number of meetings and seminars.

Completing the 25,000-square-foot Phase II will consolidate all our Buffalo-area operations at one site—and provide permanent space for CSICOP's much-needed research library, seminar-meeting rooms, and additional office space. In addition, there will be room for expansion as CSICOP continues to grow.

It's Up To You

Your contribution at this time will help us to maintain our momentum as we accumulate funds for the design and construction of Phase II. Donors of $1,000 or more will be listed in a special commemorative album. Names of donors of $5,000 or more will be inscribed on a bronze plaque. A seminar room in the Phase II building will be named after anyone giving $25,000 or more, and a wing of the building will be named for anyone giving $100,000 or more. Gifts may be paid through three-year pledges payable quarterly, or with stocks or bonds.

Please make your contribution today. Make checks payable to CSICOP and mail to the CSICOP/Center for Inquiry Capital Fund Drive, Box 703, Buffalo, New York 14226-0703. Inquiries regarding substantial gifts, phased pledges, or bequests may be made in confidence to Paul Kurtz at the same address.

— —

Committee for the Scientific Investigation of Claims of the Paranormal
CSICOP, Box 703, Buffalo, NY 14226-0703

Yes, I support skepticism, science and reason! Here is my tax-deductible commitment to the CSICOP/Center for Inquiry Capital Fund Drive.

Name _____

Address _____

City _____ State _____ Zip _____

☐ Pledge payable over three years in 12 quarterly payments.

Amount: ☐ $100 ☐ $500 ☐ $1,000 more ☐ $5,000 or more ☐ Other $ _____

☐ Seminar room, $25,000 ($694.44 a month, billed quarterly.)

☐ Wing, $100,000 ($2,777.77 a month, billed quarterly.)

☐ *My gift is for* ☐ Building Fund ☐ Endowment ☐ Where most needed

☐ Check / Money Order ☐ MasterCard ☐ VISA **Or call 800-634-1610.**

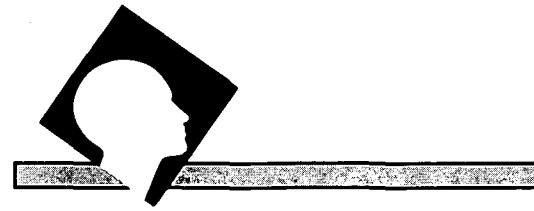
Credit Card Donors only

Acct. No. _____ Exp. Date _____

Signature _____ Daytime Phone _____

☐ *Please have campaign representative call me.*

Psychic Vibrations



ROBERT SHEAFFER

TV's UFO Flap, Earthquake Lights, and Francis Bacon

For a week this spring it seemed as if some Force from the Beyond had been unleashed. On May 15, CNBC's "The Real Story" gave us accounts of reincarnation, UFO encounters, religious visions, the Bermuda Triangle, and witches. That same evening, the Fox network presented "Sightings: UFO Update" and CBS gave us "Ancient Secrets of the Bible," suggesting that the miracles of the Old Testament have a basis in historical fact and allowing the "evidence" to be presented by creationists Duane Gish and Carl Baugh. On May 17, NBC presented a two-hour "Unsolved Mysteries" special, more UFO encounters, a haunted mansion, and conspiracies. That same evening, CBS served up the first installment of its miniseries "Intruders," dramatizing accounts of women supposedly kidnapped and raped by space aliens. Then on May 20, the regular weekly "Unsolved Mysteries" aired, featuring the 1989-90 Belgian UFO flap. It was not Halloween that motivated this remarkable outpouring, but something far more significant—ratings time.

On "Larry King Live" a few weeks earlier, David Jacobs, the author of *Secret Life: Firsthand Accounts of UFO Abductions*, claimed that more than a million people were abducted aboard UFOs. Jacobs admitted to sharing King's puzzlement that there aren't many thousands of accounts from people who happened to walk by the victims' homes and notice the spaceships hovering overhead. But Jacobs suggested that it is the aliens' amazing technological proficiency that permits them to abduct people invisibly and perform other amazing feats, such as "floating" their victims out through closed windows. However, abductionologist James Harder warns against believing that the aliens depicted in "Intruders" are "representative" of extraterrestrial visitations. Harder insists that benevolent visitations are "at least ten times more prevalent" than the menacing ones depicted, and he suggests that CBS may have been misled by government misinformation aimed at frightening the public into supporting continued high levels of defense spending. And still no end to the abductions is in sight: Philip J. Klass reports in his *Skeptics UFO Newsletter* that John E. Mack, professor of psychiatry at Harvard and consultant for CBS's "Intruders," recently received a $200,000 cash advance from Scribners to write a book to be titled *The Abduction Syndrome*. It's a safe bet that "alien abductions" are bound to continue for as long as people are eager to hear them.

In other exciting developments, the magazine *UFO Universe* reports that the Puerto Rican Research Group is announcing the discovery of a secret

UFO base at Laguna Cartagena, near the town of Lajas in Puerto Rico. Supposedly "the Federal Government has installed military armed forces to maintain a constant 24-hour vigilance. There are strict orders not to let anyone get near this place." Thousands of residents of Lajas are said to have watched in amazement as two F-14 fighters disappeared while pursuing a giant triangular UFO. If *SI* readers in the area are not easily spooked, they might want to check this out. The presence of a second alien base was reported in this same magazine, this one in the Antelope Valley, near the Tehachapie Mountains of southern California.

That supposed photo of a "dead alien" you may have seen making the rounds of UFOlogy is in fact just a wax model that was part of the "Man and His World" exhibition in Montreal in 1981. It was recently shown by Nippon Broadcasting in Japan in a documentary on UFOs, and one-time Russian cosmonaut-trainee Maria Popovich included it in her book *UFO Glasnost* as a supposed fatality from the saucer crash at Roswell.

* * *

Elsewhere on the UFO front, geophysicist John S. Derr got considerable public attention this past April when he told the Seismological Society of America that some UFO sightings may be caused by impending earthquakes. Tectonic strain, says Derr, may cause luminous phenomena, known as earthquake lights, which can be manifested as a strange glow in the sky or even as mysterious-looking balls of electricity that float in the air near fault lines. Working from a computerized list of UFO sightings, after supposedly eliminating objects that were explainable in other terms, he claims to have found a correlation linking UFO sightings with the epicenters of future earth-

quakes.

Actually, the tectonic strain theory is nothing new. It was first popularized in the 1979s by psychology professor Michael Persinger of Laurentian University in Ontario, with whom Derr collaborates. Persinger claims that tectonic strain correlates well with not only waves of UFO sightings but other "Fortean events" as well. He explains that intense columns of electromagnetic energy may cause objects to move about in a manner suggesting "poltergeist activity," while as the electromagnetic intensity increases we may see what are described as "animal mutilations" or hear of people mysteriously electrocuted, giving rise to reports of "spontaneous human combustion."

While it is well established that the piezoelectric effect produces electromagnetic energy from strain in rocks, like the faint current generated by a phonographic cartridge, the amount of energy required to produce Derr and Persinger's remarkable natural phenomena are many orders of magnitude beyond anything that has ever been measured. Moreover, University of Manitoba astronomy instructor Chris Rutkowski, Persinger's chief critic, has pointed out in painful detail how the statistical studies only give good correlations when you introduce a "lag" or "lead" effect as well as a distance effect, the same kind of effects that are sometimes used to produce correlations in ESP experiments. In many cases, UFO reports in a given area were shown to be "correlated" with a single earthquake event several hundreds of kilometers away that had occurred many months earlier; and some UFO reports used in the correlations were shown by other researchers to have been caused by aircraft, stars, hoaxes, and so on.

Some of the more remarkable effects arising from tectonic strain, says Persinger, like sightings of crypto-animals, may be hallucinations triggered by direct electromagnetic stimulation of the brain. If this is correct, it is puzzling that people under-

going a Nuclear Magnetic Resonance diagnostic in a hospital, where magnetic fields billions of times stronger than any occurring naturally outdoors are centered directly on their skulls, do not make reports of entire choirs of angels dancing about the facility.

* * *

Each year millions of tourists visit Bruton Parish Church, a splendidly preserved piece of early Americana in the heart of Colonial Williamsburg, Virginia. Thomas Jefferson and Henry Clay were no strangers there, and the church supports an active congregation to this day. What most visitors do not know is that, according to legend, buried inside a secret vault underneath the ruins of the original church may be the missing crown jewels of England, birth certificates proving that Francis Bacon was the illegitimate son of Queen Elizabeth I, and documents essential to world peace.

New Age minister Marsha Middleton, her husband Frank Flint, their two children, and some followers came the two thousand miles from Santa Fe, New Mexico, to Williamsburg to save the world from the disaster that, according to them, will befall by the year 2000 unless they are able to unearth Francis Bacon's plans for a new world order. The travelers claim to be guided by the spirit of the legendary eighteenth-century charlatan, the Count Saint-Germain, who according to Middleton should know about these things since he had actually *been* Francis Bacon in a previous incarnation, as well as having been Christopher Columbus. These are students of Marie Bauer Hall, the 88-year-old woman who allegedly discovered clues to a vault back in 1938 from supposed cryptograms on the tombstones in the churchyard, and from symbols in a seventeen-century book. The matter was nearly forgotten until Count Saint-Germain guided Middleton and her followers there in 1991.

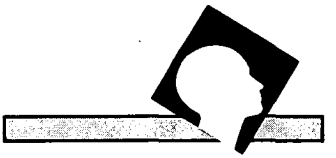
Middleton, Flint, and follower Doug Moore started an illegal dig for the supposed vault on September 9, 1991, but didn't get very far before they were caught. Afterward, they rallied public support, attempting to pressure the church's vestry to approve their plan. "There's a spiritual energy in that vault that the vestry and a lot of people don't understand," said Middleton. "We know that [Rector] Dr. May and vestry officials are not educated in this type of ancient metaphysical documents," added one of her followers. But the church decided against them, so the three started a second illegal dig on November 27, and once again did not get very far. Finally, a permanent restraining order was obtained prohibiting Middleton, Flint, and Moore from setting foot on the church property.

Paul Parsons, administrator at Bruton Parish, notes that there was a complete excavation around the old church under Maria Hall's direction in 1938, and nothing unusual was found. Nonetheless, one of Middleton's followers was prepared to pledge $50,000 toward excavating the supposed vault, expecting to find original manuscripts of the plays of Shakespeare, which of course were really written by Sir Francis Bacon. Hall, who did not take part in any of the illegal digs, explained that clues to the vault could be found in the seal on the Virginia state flag. The female figure on the seal, standing over a fallen warrior, represents Athena, who she said became Eve in a reincarnation. Athena's spear points to the ground, "where the vault is buried." □

A Celebration of Isaac Asimov

A Man for the Universe

KENDRICK FRAZIER



Isaac Asimov's death on April 6 was a loss to the world. We here celebrate his life and works. Your editor begins with a personal overview. Interspersed, we present invited reminiscences from Arthur C. Clarke, Frederik Pohl, Harlan Ellison, L. Sprague de Camp, Carl Sagan, Stephen Jay Gould, Martin Gardner, Paul Kurtz, Donald Goldsmith, James Randi, and E. C. Krupp.

Isaac Asimov was the master science educator of our time, and perhaps of all time.

Fame came to him early for his science fiction. To me his *I, Robot* (a collection of related stories), not the more renowned *Foundation* series, was his most memorable fiction, just ahead of such works as *The Martian Way, The Stars, Like Dust,* and the *The Gods Themselves.*

But it was his science fact, particularly his science essays, that taught millions of people science. They turned me on to science as no science teacher ever did. In my freshman year in college I was a physics major, but I suffered a rude shock: the professors didn't make physics clear and interesting the way Asimov did. Suddenly it was a confusing hodgepodge of formulas and complex terms—not the orderly historical progression of people and related concepts that all science was with Asimov. Asimov had spoiled me! I hadn't expected this. For my interests, needs, and tastes, Asimov's approach was better, and to this day I still think the historical, cultural approach to teaching science has the most merit for many kinds of students.

Anyway I soon found myself a fledgling science writer rather than a would-be scientist. I took some comfort from the fact that Asimov, believing he'd probably not make a first-rate laboratory chemist, had taken the same path, except that he had a Ph.D. in chemistry. Sometime in those formative college years, about 1961, I wrote him. I asked if I should get

Drawing by Mark Hanover

a degree in science first before going into science journalism. I was astonished and joyous when I immediately got a card back signed "Isaac Asimov," saying yes, I should. I didn't take his advice.

But I did continue to read and learn from him. *The Intelligent Man's Guide to Science*, first published in 1960, was his systematic effort to cover all fields of the physical and biological sciences in one readable volume. It was exceedingly popular and became the model for writing about science for the "intelligent layman." Here his phenomenal breadth of knowledge, easy grasp of complex subject matter, and ability and determination to write directly, clearly, and simply for the nonscientist shone like a brilliant beacon. In three revised editions over nearly three decades, the book kept up with the rapid advance of science. Its title also evolved, regrettably losing the direct appeal to lay intelligence but thankfully dropping the unconscious sexist bias, and the current edition (all 940 pages) is titled simply *Asimov's New Guide to Science.*

His 941-page *Asimov's Biographical Encyclopedia of Science and Technology*, now in a second revised edition, sketches the lives and achievements of 1,510 great scientists from antiquity to modern times. It's not just highly readable—that's an Asimov trademark—but he arranged it chronologically, not alphabetically nor by subject, so that a careful reader can get a sense of the historical flow of ideas. Asimov believed that telling the history of science through the scientific contributions of the people who made it "stress[es] the fact that scientific knowledge is the painfully gathered product of thousands of wonderful, but fallible, human minds."

My favorite Asimov writings were his monthly science essays published in the *Magazine of Fantasy and Science Fiction.* They have appeared for 33 years. Only occasionally did I find the magazine itself, but about every 18 months a new collection of the essays was published as a Doubleday book, and I eagerly awaited each new one. The twenty-fifth book in this series, *Out of the Everywhere*, was published in April as a Pinnacle paperback. Just a few of the other ones: *Fact and Fancy* (the first), *The Left Hand of the Electron, The Stars in Their Courses, The Planet That Wasn't, Quasar, Quasar Burning Bright, X Stands for Unknown, Far As Human Eye Could See*, and *The Relativity of Wrong.* (The last book's title essay was published in the Fall 1989 SKEPTICAL INQUIRER, and his "Asimov's Corollary," about fringe-science, was published in our Spring 1979 issue; Isaac always cheerfully granted me permission to reprint any of these essays.)

To this day I'd recommend any of these books as one of the best ways for someone interested in science to begin to learn about it in some historical depth. His 1979 F&SF anthology, *The Road to Infinity*, contained his annotated listing of the first 244 of these essays.

I loved the way he started each essay with a personal anecdote. Here his wit and humor, his jokes about his ego and intellect, the esteem he accorded a desire to learn, his masterful put-downs of those who *willfully* demonstrated ignorance about science, his cheerful embrace of the values of reason and rationality, all came through in entertaining style. It was the "Good Doctor" in a quiet conversation with the "Gentle Reader." Then he'd cleverly segue to the subject matter at hand, whatever it might be, always beginning at the beginning, with a historical approach. He was an innate story teller, and a very orderly one. Unlike textbooks, here too he told of the people who

did science and the way the concepts developed and built upon one another over time. What a wonderful way to teach! And to be taught!

These essays were more than just expositions. Like good science fiction, they were filled with provocative ideas. An example is the title essay in *The Tragedy of the Moon.* The tragedy Asimov refers to is that early people, by seeing that the moon goes around the earth (as the sun, planets, and stars also *appear* to), were led by their senses to believe that we are the center of the universe, an anthropocentrism whose effects remain to this day. What if, he asked, Venus had had a moon of the same relative size? Such a moon could have been visible to the eye from the earth, and people would have had a clear example of another heavenly body besides the earth having something revolving around it. The history of human thought and culture might have been noticeably different. Balancing this "tragedy of the moon" is "The Triumph of the Moon." In this companion essay, Asimov considered how life itself may owe a seminal debt to the moon; shallow tide pools, whose ebbs and flows are caused mainly by lunar tides, may have served as the place of molecular self-assembly that resulted in the first life-forms on earth. Perhaps a large moon is necessary for life on a planet to take hold.

Asimov did not like to travel, and seldom did so, preferring instead to roam about the universe in his imagination, and not coincidentally to keep at the typewriter (and only much later the word processor) day and night. Nevertheless, he was an outgoing, ebullient man, with a razor wit and world-class sense of humor (yes, he wrote books of limericks and books about humor). The first time I ever saw him was at a science-fiction convention in Washington. There he

Arthur C. Clarke

Many years ago, when introducing Isaac Asimov to a Mensa Society meeting in London, I said, "Ladies and gentlemen, there is only one Isaac Asimov." Now there is no Isaac Asimov, and the world is a much poorer place.

Isaac must have been one of the greatest educators who ever lived, with his almost half a thousand books on virtually every aspect of science and culture. His country has lost him at its moment of direst need, for he was a powerful force against the evils that seem about to overwhelm it (and much of Western society). He stood for knowledge against superstition, tolerance against bigotry, kindness against cruelty—above all, peace against war. His was one of the most effective voices against the "New Age" nitwits and fundamentalist fanatics who may now be a greater menace than the paper bear of communism ever was.

Isaac's fiction was as important as his nonfiction, because it spread the same ideas on an even wider scale. He virtually invented the science of robotics—and named it before it was born. Without preaching, he showed that knowledge was better than ignorance and that there were other defenses against violence than violence itself.

Finally, and not least, he was great fun. He will be sorely missed by thousands of friends and millions of admirers.

and Harlan Ellison were going at it from opposite ends of a giant, standing-room-only ballroom in what I can only describe as an insult-hurling contest. The game was to see who could get the best of the other with the wittiest and most penetrating barbs. Harlan, who is very, very good at this, had here met his match. It was all great fun.

It was always amusing to witness the banter between Asimov and his good friend Arthur C. Clarke. They constantly teased each other in print over who was the better science-fiction writer and the better science-fact writer. Finally, they came to an equitable agreement. It was known as the Clarke-Asimov Treaty. As a result, Clarke's nonfiction book *Report on Planet Three* contained this dedication: "In accordance with the terms of the Clarke-Asimov Treaty, the second-best science writer dedicates this book to the second-best science-fiction writer.

Clarke introduced Asimov at a conference in 1974 as a four-typewriter threat, "the only man who can type separate books simultaneously with his two feet as well as his two hands." He calculated that Asimov to that point had been responsible for deforestation amounting to "5.7 times ten to the sixteenth micro-hectares. . . . All those beautiful trees, turned into Asimov books." Asimov responded that Clarke's introduction was the very worst kind—long and clever—and intentionally so. And he told his audience Clarke was the kind of man who, upon receiving a 75-page crank letter in an indecipherable hand-written scrawl on onion-skin paper purporting to explain the entire universe, would reply saying he couldn't give the theory the attention it deserved "but my friend Isaac Asimov is interested in just this sort of thing" and give Asimov's address. (This whole amusing exchange appears in Clarke's *The View from Serendip*, and my thanks to Arthur Clarke for reminding me of it.)

Clarke also thought our readers might enjoy this limerick that Asimov wrote on a paper napkin and gave to him (he still has it) at a science-fiction publisher's dinner in New York in 1977:

> Old Arthur C. Clarke of Sri Lanka
> Now sits in the sun sipping Sanka
> Enjoying his ease
> Excepting when he's
> Receiving pleased notes from his banker.

When CSICOP was founded by Paul Kurtz in 1976, Asimov was one of the original founding Fellows. Even with such luminaries as Martin Gardner, James Randi, Carl Sagan, and B. F. Skinner as Fellows as well, he was perhaps the most famous. I came on board the next year as editor and soon thereafter wrote Asimov asking him to be a SKEPTICAL INQUIRER consulting editor. He readily agreed. The next year I met him for the first time when he dropped in on a meeting of the CSICOP Executive Council in a midtown Manhattan hotel. For a man thought to have such a formidable ego, his first words to me were unexpected: "Oh, you're my editor!" This was a joke, of course, for no writer ever less needed an editor, much less me, but I have never forgotten that gentle kindness.

Asimov mostly listened that morning (another attribute one would have been led to believe was uncharacteristic). In chitchat afterward about creationism, he quickly caught a mortal flaw in a typical creationist argument against evolution. "The earth isn't a closed system!" he exclaimed with an exasperated laugh. "The sun provides energy from the outside. Nothing about evolution

Frederik Pohl

Isaac was part of my life for more than half a century. Sometimes we worked together. I was his literary agent for a while, now and then his editor. We did some writing together, too—a couple of short stories long ago, and then *Our Angry Earth* just last year—but most of my memories of Isaac are not of our professional relationship but of moments we shared. I remember huddling with him over a television set in a Boston hotel room when the first pictures of the surface of Mars were coming in, and the way he looked up at me indignantly and said, "Craters? How come neither of us thought of *craters* on Mars?" I remember a Caribbean cruise to watch the nighttime launch of Apollo 17, when I turned around just after lift-off and saw Isaac illuminated in that giant sunburst Saturn-5 rocket flare with Bob Heinlein and Ted Sturgeon beside him; I wished I had had the intelligence to take along a camera so I could photograph those faces shining in that wonderful light. And I remember the Futurian days, when all of us wanted so badly to get published. In those poverty-stricken Depression times Isaac was not only a friend, he was a valuable economic asset, because when the thirst struck and the bankroll was flat I could always walk across Prospect Park to where his parents had their candy store and get a free chocolate malted from his mother. Of course there are plenty of more substantial reasons to remember Isaac—all those books, all those wonderful accomplishments—but those are some of the ones that are my own.

Isaac knew he was dying, and calmly and courageously let us know it, too. But, even though I was forewarned, when CBS woke me that Monday morning with the word that he was gone it still hurt. There has never been anyone else like him, and I don't think there ever will be again.

---

violates the laws of thermodynamics."

In 1983 Asimov put together a collection of essays for Prometheus Books titled *The Roving Mind.* The essays covered a wide variety of topics that included fringe science, technology, the future, and social issues involving science. His dedication read:

> To the good people of the
> Committee for the Scientific
> Investigation of Claims of the
> Paranormal,
> an island of sanity in a sea of
> nonsense

One of my disappointments is that CSICOP never held one of its big annual conferences in New York City so that we might have had Isaac as our keynote speaker—what an attraction that would have been!—and awarded him our "In Praise of Reason" Award. He richly deserved it.

When we celebrated the tenth anniversary of the SKEPTICAL INQUIRER in 1986, Asimov contributed an original essay. It was titled "The Perennial Fringe." While it granted the ready appeal of comforting pseudoscience ("a thumb to suck, a skirt to hold") in comparison with uncertain science, it ended with a ringing appeal

that, where matters of state and democracy are concerned, we never let the forces of unreason prevail. "We must fight any attempt on the part of the fringers and irrationalists to call to their side the force of the state. . . . That we must fight to the death" (See *SI*, Spring 1986, reprinted in the *SI* anthology *The Hundredth Monkey and Other Paradigms of the Paranormal*, Prometheus Books, 1991.)

Fifteen years ago, Asimov took time out from his other works to write his autobiography. He finished it on New Year's Eve, 1977; it and a coronary had cut into his productivity somewhat: in his annual end-of-year stocktakings he noted that in 1977 he had published only ten books (!), the fewest in seven years; and in 1978, seven. The autobiography turned out to be 640,000 words long, and his editor said it would have to be published in two volumes. He playfully protested that William Shirer's *Rise and Fall of the Third Reich* was 650,000 words long, "according to my careful word count, and *that*'s in one volume," but to no avail. The first volume (1920–1953) became *In Memory Yet Green;* the second (1954–1978), *In Joy Still Felt.* Drawing upon daily diaries he assiduously kept and strictly chronological (that sense of order again), it's as highly readable as all his other writings and is filled with information and delightful stories from his daily life.

Asimov ended the 806th and final page of *In Joy Still Felt* with the now-poignant words, "To Be Continued, Eventually." A few pages earlier he wrote: "It is my intention, if I live to the end of the century or thereabouts, to do a third and (I suppose) final volume to be called *The Scenes from a Life.* . . . However, the vicissitudes of life are uncertain, and I may not get the chance to do that third volume. . . ." *In Joy Still Felt*, published in 1980, was Asimov book number 215. It's astonishing to realize that in his final 12 years of life he would more than match that total output. By the time of his death, early in the morning on April 6, 1992, the number of Asimov books had long since passed 460 and was quickly rising toward 500. His was a prodigious and glorious body of work, and in combination of magnitude, substance, breadth, and diversity, it is likely never to be equaled.

Isaac Asimov would countenance no illusions about the finality of death. Yet through his works and in the lives of those he affected, he will live on, forever. He, perhaps more so than any other person in history, truly is a man of, and for, the universe.

"Science does not promise absolute truth, nor does it consider that such a thing necessarily exists. Science does not even promise that everything in the Universe is amenable to the scientific process."

—Isaac Asimov, Introduction to *'X' Stands for Unknown*

Harlan Ellison

Everything Isaac stood for, everything he tried to teach us, prevents me from eulogizing him by way of suggesting He Has Gone to a Better Place. I'd really like to; but he won't permit it.

In the 1984 collection of his science essays, *X Stands for Unknown,* Isaac wrote: "There seems to be a vague notion that something omniscient and omnipotent *must* exist. If it can be shown that scientists are not all-knowing and all-powerful, then that must be the proof that something else that *is* omniscient and omnipotent *does* exist. In other words: Since scientists can't synthesize sucrose, God exists.

"Well, God may exist; I won't argue the point here—"

And a year earlier, in *The Roving Mind,* he began an essay on "faith" titled "Don't You Believe?" like this:

"One of the curses of being a well-known science-fiction writer is that unsophisticated people assume you to be soft in the head. They come to you for refuge from a hard and skeptical world.

"Don't you believe in flying saucers? they ask me. Don't you believe in telepathy?—in ancient astronauts?—in the Bermuda Triangle?—in life after death?

"No, I reply. No, no, no, no, and again no."

How dare I, then, dishonor all that he was about, publicly and privately, in print and in person, for 54 years, by suggesting that at last Isaac will be able to get firsthand answers to the questions that drove him crazy throughout most of his life, from Darwin and Roentgen and Einstein and Galileo and Faraday and Tesla . . . just sitting around, shooting the breeze with the guys, as Archimedes mixes the drinks.

As it was for all of us who needed a question answered, who called Isaac at all hours of the day or night, who drowned him in requests for answers to conundrums, so it will now be for Isaac, chasing down Cervantes and Willy Shakespeare and Jesus, buttonholing them for the answers to the maybe six or seven things in the universe he didn't know. Such little fantasies might make it easier to live with his death, but it would only be balm for those of us who listened to Isaac for decades but reverted to superstition when the bullets whistled past our ears.

Gone is gone, and with the passing of Isaac, who loved us deeply enough to chivvy us toward smartness with a relentless passion, the universe has shrunk more than a little. He is gone and, as I write these words less than twelve hours later, there is no more crying left in me. Those of us who were so dear to his heart, well, we've known for many months he wouldn't be with us much longer; and we've had time to wring ourselves out. And yet there is no end to the sense of helplessness and loss.

Isaac was as much a part of the journals that decry paralogical thinking as paper and ink; and though gone, he remains with us. As he remains with the uncounted thousands of young people who read his essays and stories and went into careers of scientific inquiry, who understood the physical universe because he made it graspable, who became better able to handle their lives because he refused to allow them to accept dogma and bigotry and mendacity in place of common sense and logic.

For all of you who mourn him in your own way, the most I have to offer is this one last anecdote of how he viewed himself and his imminent passage:

His wife, Dr. Janet Jeppson, was with him at the end, of course, and his daughter, Robyn. Janet told me, the day before he died, that toward the end Isaac had trouble speaking, could only manage a word or two from time to time. He would say *I love you* to Janet, and he would smile. But every once in a while he would murmur, "I want . . ." and never finish the sentence. "I want. . . ."

And Janet would try to perceive what he needed, and she would say, "A drink of water?" or "Something to eat?" And Isaac would look dismayed, annoyed, chagrined that he couldn't put the sentence together; and after a moment he would let it slide, and forget he had spoken. Until the time came on the Sunday before he went back into the hospital for the last visit, when he managed to say, very clearly . . .

"I want . . . I want . . . Isaac Asimov."

And Janet told him he *was* Isaac Asimov, that he had *always* been Isaac Asimov. But he looked troubled. That wasn't what he meant. Then Janet remembered that Isaac had told her, some time ago, before he began to slip into abstraction and silence, that if there ever came a time when he didn't know who he was, if there came a time when his mind was not sharp, that he wanted to be let go to sleep quietly, that extraordinary measures should not be taken.

And Janet understood that he was saying that he wanted to *be* Isaac Asimov again.

Then, in that final week before 2:30 A.M. New York time on Monday, April 6, he was holding Janet's hand, and he looked up at her and said, very clearly, the last he would ever say, "I *am* Isaac Asimov."

Yes, he was. Yes, indeed, he was.

Copyright ©1992 by
The Kilimanjaro Corporation.

"Science is a *process*. It is a way of thinking, a manner of approaching and of possibly resolving problems, a route by which one can produce order and sense out of disorganized and chaotic observations. Through it we achieve useful conclusions and results that are compelling and upon which there is a tendency to agree."

—Isaac Asimov, Introduction to
'X' Stands for Unknown

L. Sprague de Camp

I first met Isaac Asimov on May 7, 1939, at the Queens Science Fiction League. When introduced, Isaac stood up and said: "Now you see the world's worst science-fiction writer!"

For years he made such wildly self-deprecating remarks. Willy Ley and I once chided him about it, whereupon he said: "But if I don't, people will think I'm conceited!"

Willy and I told him that he could avoid such a fate by simply not talking about himself. The advice had little visible effect, since the 19-year-old Isaac was an irrepressible extrovert, voluble, impulsive, and expansive.

Over the next two years, I ran into Isaac at science-fiction gatherings. On June 28, 1941, he came to Catherine's and my apartment on Riverside Drive for dinner. In his first autobiographical volume, *In Memory Yet Green,* Isaac wrote: "It was the first time I had ever been asked to visit the home of an established science-fiction writer. It was a matter of great excitement for me." Later he told someone that the reason he had such a soft spot for the de Camps was that we were the first gentiles to treat him as a social equal.

On a later dinner visit, I offered Isaac a highball. Just a little one, he said; so I poured him an ounce of rye whiskey and added a mixer. Isaac drank the dose but soon became oddly flushed and mottled. He politely took his leave but did not dare go home in what he thought was a tipsy state. He rode the subway from one end of the line to the other, making three round trips before returning home. Actually he was not intoxicated; he later learned that he had an allergy to alcohol, which kept him a virtual teetotaler all his life.

The war news was discouraging at that time. Hitler had suddenly attacked the Soviet Union along the border established when the two powers had partitioned Poland in 1939. For a month, the Nazis made huge gains and took millions of Russian prisoners. Isaac remarked that, the ways things were going, he could look forward only to an early death. Asked why, he said: "Because I'm a Jew."

Actually he was not an observant and had no supernatural beliefs; but Nazis made no such distinction.

Since Isaac became much more productive and widely read than I, the honor of that first dinner's entertainment should go to him rather than to the de Camps.

In December 1941 came Pearl Harbor. Robert Heinlein had kept in touch with an Annapolis classmate, A. B. Scoles (then a lieutenant commander), who had been appointed director of the Materials Laboratory of the Naval Air Experimental Station of the Philadelphia Naval Base. Aware of Robert Heinlein's writing career, Scoles thought: Why not get a few of these fellows with technical backgrounds, who have been writing glibly about death rays and space ships, to go to work here and show what they can do?

So Heinlein went to work at the Materials Laboratory as a civilian engineer (the Navy refused to put him back in uniform because of his medical history), and I joined him when when I finished my naval training as a lieutenant, USNR. Scoles also persuaded Isaac, then a graduate student at Columbia, to come to Philadelphia as a civilian chemist.

For three and a half years, Heinlein,

Asimov, and I navigated desks and fought the war with flashing slide rules. Soon after the war, the now-defunct *Philadelphia Record* ran a feature article headed "Stranger Than Fiction." The piece derisively narrated how the Navy had hired three "mad scientists" (that is, science-fiction writers) to invent super-weapons, none of which worked. There was practically not a word of truth in the article. Asimov's name was misspelled; I was wrongly identified as a University of California graduate and an "expert aerodynamicist," and so on. Asimov and I wrote angry letters, but it took a threatening call from a lawyer to make the paper backtrack.

Actually, we three were assigned to separate sections and did not work together; and there was little or no mad-scientist element in our work. I tested things like hydraulic valves for Naval aircraft, trim-tab controls, and windshield de-icers. Asimov performed the chemical jobs assigned to him. Heinlein's work was so secret that I still do not know what he did.

Our contacts thereafter were episodic: meetings at conventions; Catherine's and my occasional visits to Boston; and intermittent correspondence. In 1950, while we were living in Wallingford, Pennsylvania, Isaac visited us when he came from New York for a meeting of the American Chemical Society. I was struggling with the plot of my novel *The Glory That Was*. I appealed to Isaac, who made some sound suggestions. Since the story has been reprinted several times, including a recent new edition, the book proved a fair success, for which Isaac merits part of the credit.

Years later, when Isaac had moved back to New York, I got him into the Trap Door Spiders, the all-male eating, drinking, and arguing society formed by Fletcher Pratt in 1944. Isaac remained the club's most distinguished ornament down to his death.

I considered Isaac Asimov one of my oldest, closest, and most beloved friends, although geographical separation kept us from seeing each other much more often than the monthly meetings of the Trap Door Spiders. This friendship endured despite differences of background, age, and temperament. In his youth, Isaac was noisy, brash, impulsive, and intensely emotional. As he explains in his autobiography, he could not resist the urge to show off, express opinions, make jokes, and "crack wise," even when he knew such acts to be contraproductive. I was more reserved, solitary, and introverted, although I forced myself to learn to do active things like riding and sailing. Isaac became more and more involved in his writing to the exclusion of all else. I have traveled the world; he disliked travel, avoided airplanes, and in recent decades refused to stir far from his typewriter.

My lifelong friendship with Isaac is one of my most precious memories. Of all the people I have known, I rate Isaac as the most intelligent. Added to this brilliance of mind was *character*, his utter, transparent integrity, which compelled him to do what he thought right, even at his own sacrifice. If, a century hence, someone writes about the two of us, I shall be honored to be briefly mentioned as "a friend of Isaac Asimov."

Carl Sagan

Isaac Asimov was one of the great explainers of the age. Like T. H. Huxley, he was motivated by profoundly democratic impulses to communicate science to the public. "Science is too important," he said, paraphrasing Clemenceau, "to be left to the scientists." It will never be known how many practicing scientists today, in how many countries, owe their initial inspiration to a book, article, or short story by Isaac Asimov—nor how many ordinary citizens are sympathetic to the scientific enterprise from the same cause. For example, Marvin Minsky of MIT, one of the pioneers of artificial intelligence, was brought to his subject by Asimov's robot stories (initially conceived to illustrate human/robot partnerships and to counter the prevailing notion, going back to *Frankenstein,* of robots as necessarily malign). At a time when science fiction was mainly devoted to action and adventure, Asimov introduced puzzle-solving schemes that taught science and thinking along the way.

A number of his phrases and ideas have insinuated themselves into the culture of science—for example, his spare description of the solar system as "four planets plus debris" and his notion of one day carrying icebergs from the rings of Saturn to the arid wastelands of Mars. He wrote many science books for young people, and as editor of his own science-fiction magazine he made efforts to encourage young writers.

His output was prodigious, approaching 500 volumes, always in his characteristic straightforward, plain-speaking syntax. Part of the reason his *Foundation* series on the decline of a galactic empire worked so well is that it was based on a close reading of Gibbon's *Decline and Fall of the Roman Empire:* A principal theme was the effort to keep science alive as the Dark Ages rolled in.

Asimov spoke out in favor of science and reason and against pseudoscience and superstition. He was not afraid to criticize the U.S. government and was deeply committed to stabilizing world population growth.

The microscopic probe he described in his novel *Fantastic Voyage*—which could enter the human bloodstream and repair tissue damage—was, sadly, not yet available at the time of his death. As someone born in grinding poverty, and with a lifelong passion to write and explain, Asimov by his own standards led a successful and happy life. In one of his last books he wrote: "My life has just about run its course and I don't really expect to live much longer." However, he went on, his love for his wife, the psychiatrist Janet Jeppson, and hers for him, sustained him. "It's been a good life, and I am satisfied with it. So please don't worry about me."

I don't. Instead, I worry about the rest of us, with no Isaac Asimov around to inspire the young to learning and to science.

Stephen Jay Gould

My first contact with Isaac Asimov was daunting. I picked up the phone one day, and a voice bellowed: "Gould, this is Isaac Asimov. I hate you."

"Oh," I replied with astonishing lack of originality, "why so?"

"I hate you because you write so well," he said.

So I replied, "And if I had written 400 books instead of 10, I wouldn't be paying such rapt attention to stylistic nuances either."

We both laughed and became good friends. Isaac was the best (and most copious) there has ever been—ever throughout history—in the presentation of science. Only Galileo and Huxley (maybe Medawar in our generation) matched his clarity, his verve, his dedication, and, above all, his moral sense of the rightness and power of knowledge.

Martin Gardner

Knowing Isaac Asimov was one of my life's great benedictions. I can vividly recall our first meeting. Isaac had been reading my *Scientific American* columns, and he wanted to know what sort of formal training I had in mathematics. When I told him I had none, that I merely read what the real mathematicians were saying and then tried to dish it out in entertaining ways, he slapped his forehead. "You mean," he exclaimed, "that you are working the same racket I am?"

Isaac liked to pretend he was an egotist, but when he talked about his obviously high intelligence it was always in such amusing ways that it annoyed no one. When Isaac was about to be given an anesthetic before an operation, recalled Andy Rooney in a fine tribute to his "lovable" and "unlikely" friend, he said to the doctor, "I hope you understand this is not an average brain you're about to put to sleep." He even had a business card that said under his name, "Natural Resource." Unlike the truly conceited, Isaac never indulged in false modesty.

No modern writer has done more, or is likely to do more, to introduce people of all ages to the wonders of science and to combat the scientific illiteracy that increases every year. It has seeped into Congress. It even invaded the White House when it was occupied by the Reagans. Something is radically wrong with a nation willing to issue a stamp honoring the forgettable hound dog and drug addict Elvis Presley. Let us hope that someday our post office will have enough sense to devote a commemorative stamp to Isaac Asimov, an authentic national treasure.

Paul Kurtz

Isaac Asimov affected all who knew him. This was not only because of his writing virtuosity, which he accomplished with elegance and ease, but because of the incisive mind and brilliant wit that he displayed in personal encounters.

My first contact with Isaac was about 20 years ago when I asked him to join the humanist movement. Later, when we founded CSICOP (in 1976), I asked him if he would join our efforts, and his response was immediate and affirmative. He remained a strong supporter of the SKEPTICAL INQUIRER and invariably responded generously to our financial appeals. He and I did a joint radio call-in interview show in New York City several years ago, and he was extremely forthright in his skepticism. I was amused by his comment that, when he spun out his tales of science fiction, which sometimes included things like ESP, he "never imagined people would *believe* that crap."

Isaac was a strong atheist. He gladly endorsed the Secular Humanist Declaration, which I drafted in 1980. Later he was elected a Humanist Laureate of the Academy of Humanism. When I visited him in his apartment to interview him for an article in 1982, he said that, although all too many skeptical atheists stay in the closet because they think their views are not socially respectable, he was going to express his own religious skepticism forcefully. Thus he made clear that he did not believe in God or the immortality of the soul, and that he thought that the Bible was full of contradictions and factual errors.

I was pleased that Prometheus Books was able to publish five books by Isaac. All the manuscripts arrived in near-perfect form, needing very little editing. He was not only a master of the language, but a fierce defender of reason and science.

I wish that Isaac had been able to participate in a national CSICOP conference; but, as is well known, he was fearful of flying. We were planning to build a CSICOP conference around him in New York City and regret that he died before we could. The skeptical movement has lost a powerful spokesman.

Donald Goldsmith

My acquaintance with Isaac Asimov arose from the 1974 AAAS symposium on Immanuel Velikovsky, which I helped to organize. Isaac then contributed the foreword to *Scientists Confront Velikovsky,* the book that grew out of that symposium, which I edited. During the final stages of preparing the manscripts for publication, as I awaited Isaac's comments on my editing, he suffered a heart attack. Any other writer would have let so small a matter as this foreword—in a book edited by an unknown—quite naturally wait for his recovery, but Isaac sent me a handwritten note stating, "I have annoyed everyone by having a coronary and being committed to a hospital. Under the circumstances, I'll go along with any changes you wish made." Only Isaac Asimov could combine such generosity and organization with an ability to work on ten projects at once. We shall not see his like again.

James Randi

I was once long ago invited to a meeting of the Trap Door Spiders, an informal group of science-fiction and mystery writers in the New York area who gathered regularly for an evening of fine food and drink, always at the home of a member. It was the custom that one visiting guest was permitted to attend, with the strict requirement that he had to, on that occasion, provide the others with a good reason for his continued existence. (The all-male Spiders held these affairs in the absence of their wives.) Apparently I was able to make an adequate case for being permitted to live on, and thus I first met Isaac Asimov, in the company of John Dickson Carr, George O. Smith, Lester Del Rey, Frederik Pohl, and other literary luminaries.

Isaac's formidable sideburns seldom stopped moving as he competed with others in improving their mutual knowledge of the world. He was, I quickly discovered, an authority on everything.

As I've always said about Isaac, he had an enormously developed ego, but he had every right to it. Although his name is now well known around the world, I was informed by my editor friend Clayton Rawson that there was a period in the early days when Isaac suffered the indignity of having his name incorrectly spelled. At the time that he was submitting his first stories to editors in New York, Rawson and his colleague Lester Del Rey played a joke on him by mailing him an edited version of one of his short stories with the author's name as "Asaac Isimoff." Isaac in those days had the reputation of not spending his money needlessly, but this affront brought about a rare person-to-person long-distance phone call from the alarmed author to Rawson's New York office, much to the amusement of all—except possibly the author himself.

Aware of this classic situation, I found myself one evening appearing on an early New York television program along with a number of other people, among them Isaac. Fiend that I am, I changed his name on the dressing-room list to Asaac Isimoff, and removed mine. Seated at the mirror prettying up for my appearance, I soon heard a mighty roar echoing about the stairways of the studio. "There's a damn magician on this show somewhere, and I want his heart!" bellowed the itinerant genius as he confronted this impertinence. I barely survived his wrath.

Perhaps Isaac Asimov established some sort of record for leaving his thoughts behind him, in the multitude of books, essays, stories, and manuscripts that he created. Every subject from the Sun to the Bible came under his examination and was the better for it. His interaction with my life certainly served me well, and I remember him as a delightful, brilliant, and kindly man who never refused me a favor and who added to my enjoyment of, and dedication to, science.

The man never believed in survival after death or in any of the metaphysical claptrap with which he was regularly confronted by the nut fringe. Paradoxically, he had a lifelong fear of flying in an airplane yet wrote of heroes who traveled at light-speed-plus. But, for all we know, dear Isaac may now be out there among the planets and stars, characteristically chasing after some particularly interesting comet as the possible subject for his next book. If the galaxies have secrets, they may now prepare to surrender them to his scrutiny.

E. C. Krupp

I never got to meet Isaac Asimov. I know him from his books. There is a line of 22 mass-market paperbacks under his byline parading on one of the shelves in my office at Griffith Observatory. (Of course, that does not count the science fiction I have at home.) That is a small fraction of his total output, but 22 titles by one author is a respectable showing on any shelf. I am particularly fond of *The Stars in Their Courses.* It contains classic Asimov—"Worlds in Confusion." In it, Isaac discussed the physical implications of Velikovsky's pseudo-scientific ideas. Asimov's essay is a showpiece of popular science. Clarity, humor, logic, and anecdote—they are all there in spades. Some of his lines continue to lighten my heart:

> There is no belief, however foolish, that will not gather its faithful adherents who will defend it to the death.
>
> Gentle Reader, place all myths and legends of the human race at my disposal; give me leave to choose those which I want to use and allow me to make changes where necessary, and I will undertake to prove anything you wish proven.
>
> If I must choose between Immanuel Velikovsky and Cecil B. de Mille, give me de Mille, and quickly.

Thanks, Isaac, I, too, prefer de Mille.

"Do you suppose the general public supported Darwin and waxed enthusiastic about him and made him rich and renowned and denounced the establishment for persecuting him? You know they didn't. What support Darwin did get was from scientists. (The support any rational scientific heretic gets is from scientists, though usually from only a minority of them at first.)"

—Isaac Asimov, "Asimov's Corollary," from *Quasar, Quasar Burning Bright* (1978) and SKEPTICAL INQUIRER (Spring 1979)

Isaac Asimov on . . .

"I am not a prophet by trade: I merely write science fiction. However, . . . in May 1939, when I was but nineteen years old, I wrote a story I called 'Robbie.' It was about a robot of the year 1998. . . . It was clearly an electronic computer, but I had not bothered to foresee miniaturization. . . . (I never thought to call these brains 'computers' till the real thing came along.) I spoke, therefore, of 'positronic brains,' mentioning them first in a story called 'Reason,' which I wrote in November 1940. . . . I brought into existence a research establishment that designed positronic brains (computers, that is) and, in a story named 'Runaround,' written in October 1941, I named the science 'robotics.' Apparently, I was the first person in history to use that word, though I was not aware of that. I thought the word existed. It exists *now*, of course, and my often-repeated 'Three Laws of Robotics,' first explicitly stated in 'Runaround,' may well have helped bring the word into actual use."

—"I Am a Signpost,"
The Roving Mind
(pp. 331-332)

". . . One can appreciate and take pleasure in the achievements of science even though he does not himself have a bent for creative work in science. . . . Initiation into the magnificent world of science brings great esthetic satisfaction, inspiration to youth, fulfillment of the desire to know, and a deeper appreciation of the wonderful potentialities and achievements of the human mind."

—"What Is Science?"
Asimov's New Guide to Science (p. 15)

"My business and my *passion* (even in my fiction writing) is to explain. Partly it is the missionary instinct that makes me yearn to make my readers see and understand the universe as I see and understand it, so that they may enjoy it as I do. Partly, also, I do it because the effort to put things on paper clearly enough to make the reader understand, makes it possible for *me* to understand, too."

—Title essay of
The Left Hand of the Electron (p. 28)

ust About Everything

"Inspect every piece of pseudoscience and you will find a security blanket, a thumb to suck, a skirt to hold. What have we to offer in exchange? Uncertainty! Insecurity!"

—"The Perennial Fringe," SKEPTICAL INQUIRER, Spring 1986

"The typical exoheretic is so unaware of the intimate structure of science, of the methods and philosophy of science, of the very language of science, that his views are virtually unintelligible from the scientific standpoint. As a consequence, he is generally ignored by scientists. . . . In frustration, the exoheretic is very likely to appeal over the heads of the scientists to the general public. . . . The appeal to the public is, of course, valueless from the scientific viewpoint. The findings of science cannot be canceled or reversed by majority vote, or by the highest legislative or executive fiat."

—Foreword to *Scientists Confront Velikovsky*, edited by Donald Goldsmith

"With creationism in the saddle, American science will wither, and we will raise a generation of ignoramuses who will not be equipped to run the industry of tomorrow, much less to generate the new advances of the days after tomorrow."

—"The Army of the Night," *The Roving Mind* (p. 15)

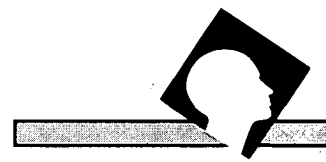
"Do we simply shrug and say that the fringers will always be with us and we might just as well ignore them and simply go about our business? No, of course not. There is always the new generation coming up. Every child . . . is a possible new field in which rationality can be made to grow. We must therefore present the view of reason, not out of hope of reconstructing the deserts of ruined minds that have been rusted shut, which is all but impossible—but to educate and train new and fertile minds."

—"The Perennial Fringe," SKEPTICAL INQUIRER, Spring 1986

Gaia Without Mysticism

PHIL SHANNON

The rise of environmentalism has been accompanied by the resurgence of beliefs about the Earth as a living, whole organism, often involving an Earth spirit. "Spaceship Earth" is seen as a remarkable, fragile, and semi-miraculous orb of life pulsating away amidst the awesome cosmic nothingness. The most prominent theory about a living Earth is the "Gaia" hypothesis, first formulated around 1970 by James Lovelock, the English inventor and geochemist, and then developed by Lovelock and Lynn Margulis (microbiology professor at the University of Massachusetts) during the 1980s.



Stripped of its New Age adherents, the Gaia hypothesis stands on its own as a testable and perhaps fruitful scientific theory.

Put simply, the Gaia hypothesis postulates that the Earth's biosphere (that band of air, land, and water that contains life) acts as a superorganism with the ability to regulate environmental conditions to sustain itself, in much the same way that the human body's homeostatic processes maintain the body's water content, temperature, and so on, at a relatively constant state (homeostasis) to keep the superorganism of the whole body alive. The Earth is one big body, according to Gaia; and all its parts, but crucially the living parts, function to keep it going. The "planet's homeostasis is maintained by active feedback processes operated automatically and unconsciously by the biota," says Lovelock. Single-celled microbes are seen as crucial to global ecology. Higher life-forms like *Homo sapiens* are not as indispensable; indeed, in some versions of Gaia we are seen as a destructive virus.

This nonprivileging of the human species is attractive to those environmentalists who are receptive to views that dethrone the world's most ubiquitous large mammal from center stage of the world, and that introduce (I think, justifiably) some humility into an anthropocen-

tric world that has pursued the desires of human society at the expense of other species and ecosystems (which are also our life-support systems).

Some environmentalists are uneasy with "Gaia," however. Lovelock's view is that, compared with the robustness of Earth's regulatory processes, humans are largely inconsequential and Gaia/Earth can withstand the worst we can do to "her"/it. Lovelock, who discovered the ozone-depleting effect of chlorofluorocarbons (CFCs) in the atmosphere, denied for 15 years that they could do any real damage (and opposed the phasing out of CFCs) because Gaia would patch up any ozone hole. Nuclear power and bombs cannot even scratch Gaia, he maintains, supporting nuclear energy. For Lovelock, Nature, on a global scale, is not "exquisitely sensitive to the depredations of man," as astronomer Carl Sagan believes. For these reasons many environmentalists stay at arms length from Gaia, which has thus tended to become the object of the attentions of those who are motivated by essentially spiritual Nature worship. A "Gaia Synthesis" convention in Colorado in 1986 had no Lovelock or Margulis but much "geopsychology" (whatever that is), Pueblo Indian myth, "etheric" energy, dancing, and rituals.

Even staid Canberra, Australia, is not immune—"Gaia" is a "Womonspace" (*sic*) based on "the primordial Earth goddess" and "the living presence of Earth." Its habitués hold spiritual rituals "on the nights of the Full Light Moon and the Full Dark Moon," winter solstice celebrations, and so on. They conduct courses on numerology, astrology, and other pseudoscientific beliefs (and all for a not unimpressive fee, of course).

What has the science of Gaia got to do with this New Age hokum? At one simple, linguistic level, the name "Gaia" was asking for such trouble. "Gaia" was chosen by Lovelock on the suggestion of classicist William Golding, his childhood friend, that he name his theory after the ancient Greek goddess of the Earth. For New Agers, this invited the familiar process of attributing physical phenomena to a mystical source unknown to, and unknowable by, scientific inquiry, in this case attributing the control and regulation of Earth's biosphere to a conscious, intervening supernatural entity, and Earth Goddess. Lovelock and Margulis did not intend this interpretation. For Lovelock, "Gaia" was simply an attractive shorthand, carrying more flair and metaphoric meaning than his original term of Biocybernetic Universal System Tendency (or BUST).

Nevertheless, "Gaia or BUST" aside, the substance of the hypothesis has led many New Agers to make a quantum leap from science to mysticism. To help understand the content of Gaia theory and its basic principles of operation, Lovelock often uses a model of an imaginary planet called Daisyworld. Daisyworld supports life in the form of a black and white species of daisy. Early in the planet's life, and (like Earth) with a faint, weak sun, the black daisies on Daisyworld dominate, since they are better at absorbing the sun's energy and using it for growth. The now black-colored surface of the planet and the sun's warming, however, heat up the planet to a point where it becomes too hot for the black daisies, allowing the white daisies, which can reflect more of the sun's rays (their albedo effect), to grow and balance the black daisies, thus cooling the planet. This black/white, heat absorption/reflection process is the thermostat that maintains a suitable heat level for daisies (life) to flourish. No intention or conscious manage-

Gaia's Scientific Coming of Age

The Gaia hypothesis is 20 years old this year. James Lovelock first mentioned the term in a brief paper in *Atmospheric Environment* in 1972. But in a very real sense Gaia's *scientific* coming of age has happened only very recently—first with the week-long American Geophysical Union Chapman Conference in March 1988 in San Diego, and now this year with publication of a major work, *Scientists on Gaia*,* based on updated versions of papers from that conference.

The book's editors, climatologist Stephen H. Schneider and biologist Penelope J. Boston, point out in the preface that when the Gaia hypothesis was first introduced it attracted attention mainly from nonscientists. These included theologians interested in the possibility that the Earth controlled its environment on purpose (teleological implications) and people interested in the "oneness of nature"—plus some others who thought the Gaia idea gave license to go ahead and pollute the atmosphere because it could take care of itself.

None of these aspects were emphasized in the scientific work of Lovelock and Lynn Margulis, note Schneider and Boston, but these "nonscientific side issues diverted attention in the scientific community away from a serious analysis of the Gaia hypothesis and its implications." In the mid-1980s, critiques and countercritiques were sallying forth, but most often in nonscientific arenas like television documentaries.

Schneider was one of those who'd engaged in such debate. He's a noted climatologist at the National Center for Atmospheric Research with longtime involvement in the public aspects of his science. His books include *Global Warming* and *The Coevolution of Climate and Life*, he's editor of the journal *Climatic Change*, and he eventually wrote an overview of the Gaia controversy for the *Encyclopaedia Britannica 1988 Yearbook of Science and the Future* (quoted in Martin Gardner's column on Gaiaism, *SI*, Spring 1989).

Schneider says he "came to realize the absurdity of the situation in which an interesting and controversial idea like the Gaia hypothesis was being debated largely in nonscientific forums, if at all."

He and scientific colleagues began discussing an AGU-sponsored conference on the Gaia hypothesis, and it eventually came to pass. But not without obstacles.

"The proposal to the AGU for a Chapman Conference was not accepted without scientific detractors," Schneider and Boston write. "It was deemed controversial, and several objections were raised to it both within the AGU council and by outside scientists. It is to the credit of that council that despite some of these criticisms, many of them based on the early perceptions of the Gaia hypothesis as

**Scientists on Gaia*, edited by Stephen H. Schneider and Penelope J. Boston. MIT Press, Cambridge, Mass., and London, 1992.

nonscience, the council approved holding a Chapman Conference on the subject, providing outside funding could be obtained." That support came, in large part from the National Science Foundation.

The rich, full-week agenda of the conference—"an illustrious event," Schneider and Boston say—is reflected in the just-published oversize book (it weighs 3.3 pounds), *Scientists on Gaia*. Biologists, chemists, geologists, geophysicists, atmospheric scientists, philosophers of science, even a congressman, George H. Brown, took part, all struggling to communicate across scientific boundaries, for the Gaia hypothesis is a prime example of a concept that demands interdisciplinary understanding.

The book opens with papers by Lovelock and Margulis, elucidating the Gaia hypothesis in clear fashion, and follows with a Darwinian critique of Gaia. It next treats the philosophical and theoretical foundations of Gaia (including James Kirchner's useful taxonomy of Gaia hypotheses), then gets down to detailed science with separate sections on three major proposed mechanisms (sulfur, oxygen, and carbon and biomass), followed by nine papers on other possible mechanisms. It concludes with sections on Gaia and catastrophe and on policy implications. The editors worked to have the authors "dejargonize" their papers, and to keep them current during the book's gestation period so that discoveries in the three years following the conference would be included.

The major proponents and critics of Gaia all get their say, all given ample space to present the scientific facts and reasoning. Here they deal with Gaia finally as a scientific hypothesis, not as New Age philosophy.

The editors attempt no overall summary other than to point out in the introduction that "not only is it premature to judge the extent to which biological homeostasis has been validated, it also appears that many of the processes by which such feedback might exist take place in geological time scales"—a warning not to expect too much from any Gaian corrections of human modifications of the atmosphere on the time scales of human civilization.

In *Scientists on Gaia* the Gaia hypothesis is at last treated thoroughly and seriously as a scientific hypothesis. The level of debate has finally been lifted into the intellectual and scientific arena in which it belongs.

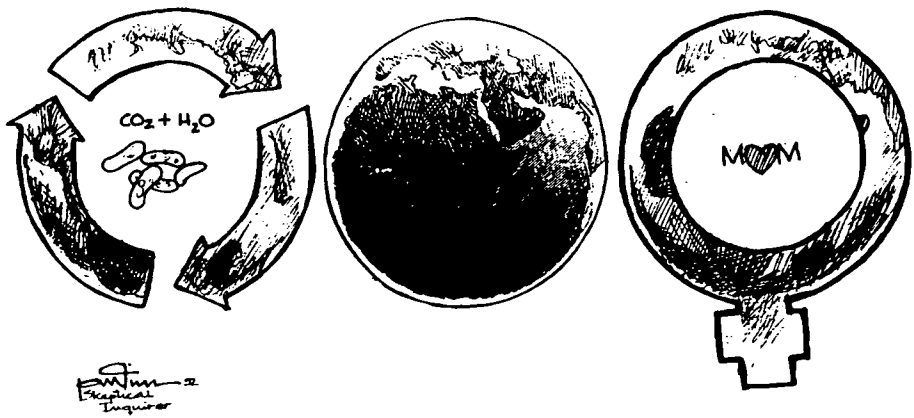
—*Kendrick Frazier*, EDITOR

ment of the environment by the daisies, or by a daisy deity, is involved in this pared-down Gaia model.

Our planet, claims Lovelock, is essentially a more complex Daisyworld. The crucial temperature regulator is carbon dioxide, the amount of which (approximately 300 ppm) in the atmosphere suits the needs of "all living matter on Earth, from whales to viruses, from oaks to algae," and is biologically controlled by all those living things. Lovelock suggests that this control by life is the best way to explain Earth's anomalous properties relative to the other planets in our solar system; namely, how Earth's atmosphere can violate the rules of steady-state chemistry and other physical and thermodynamic properties.

For example, on the basis of Earth's location between our dead planet neighbors Venus and Mars (40 million kms from Venus with its 477° average surface temperature, and 80 million kms from Mars with its surface temperature of -53°), the Earth could be expected to have a surface temperature of about 300°, whereas it is around 13°, a temperature capable of supporting life. Furthermore, this temperature has been maintained over the billions of years of Earth's existence, while the Sun has grown 30-percent hotter (enough to boil the water off the planet, as on Venus). Without life's intervention over 3.5 billion years, argues Lovelock, an environment hospitable to life would not exist.

The composition of Earth's atmosphere is also anomalous. It is far from chemical equilibrium. An active control mechanism, reasons Lovelock, must be keeping our atmosphere at 79-percent nitrogen, 21-percent oxygen, and 0.03-percent CO_2, when we should expect an atmosphere like that of Venus or Mars, i.e., 2-percent nitrogen, 98-percent CO_2, and no oxygen (and therefore no ozone to protect cells from damaging ultraviolet radiation). Such a played-out chemical entropy has occurred on the dead planets because oxidizing gases, such as oxygen and CO_2, which acquire electrons in chemical reactions, readily combine with reducing gases (e.g., hydrogen, methane, and ammonia), which lose electrons. Venus and Mars now have atmospheres that contain only oxidizing and neutral gases; Jupiter and Saturn, only reducing gases. So, asks Lovelock, why does the Earth's atmosphere maintain disequilibrium? Something is working to keep it that way, he answers. That something, which no other planet has, is life.



"Gaia, both as scientific theory and as environmental philosophy, is valuable in its own right—too valuable to be unjustly tainted by association with the New Age."

The maintenance by life of these anomalies—the level of the Earth's temperature, its stability over time, and the chemical composition of the atmosphere—challenges the conventional view among earth scientists that life exists only on Earth simply because of cosmic and geological luck. This is the so-called Goldilocks theory—Venus is too hot, Mars is too cold, but Earth is just right.

The Gaians, however, see a life-inspired order guiding the process of life's evolution on Earth. In their view, the first bacteria that frolicked on the ooze 3.5 billion years ago were unable to breathe oxygen and produced it as a poisonous waste. This toxic oxygen either combined with minerals to form oxides or escaped to the atmosphere, where some of it formed ozone. Over a billion years or so, a new type of microbe evolved from their anaerobic cousins buried in the mud away from the oxygen and ultraviolet rays. With a protective ozone shield, these early algae, the blue-green cyanobacteria, developed photosynthesis to more efficiently convert the sun's energy to plant growth. They also produced much more oxygen, which flooded the atmosphere around 2.5 billion years ago. The second evolutionary leap after photosynthesis came with organisms that developed respiration, the ability to breathe oxygen. About this time, atmospheric oxygen stabilized at 21 percent, enough to support a multitude of oxygen-breathing organisms but below the critical level for spontaneous combustion. Thus life evolved, according to Gaia theory, not due to luck but in conditions that life itself maintained by cooperatively carrying out control functions like ozone formation, oxygen stabilization, and CO_2/greenhouse planet-warming. Lovelock maintains that this early biological evolution from anaerobic microbes to photosynthesis to oxygen-breathing organisms was a collective reaction by life-forms to a changing environment in a manner that ultimately transformed that environment. No decision was involved, however. No councils of microbes were formed to develop policy, no Earth Goddess snapped her fingers.

This is where Gaia's critics disagree. They charge that the Gaia hypothesis is teleological; that is, it invokes a goal-oriented quality from manifestly nonconscious biota. It introduces a necessarily mystical quality beyond the normal functions of nonconscious life-forms known to science. Humans are purposive and can consciously alter the environment, not so microbes, algae, trees, and rocks. Lovelock's often casual use of the "Gaia" metaphor doesn't help matters. He often sounds as if he is imputing intent to a She Goddess or to the planet. On the other hand, true believers in a Mother Earth Goddess called Gaia really do believe in a Being astride and presiding over Earth pulling biological levers. Lynn Margulis, however, dissociates her scientific concept of Gaia from the supernatural one—"the religious overtones of Gaia make me sick!" she said about the New Age distortions of Gaian theory.

Nevertheless, the critics argue that the Gaia hypothesis cannot avoid

intent. The critics claim to have simpler, nonteleological, purely geophysical explanations for the peculiar properties of Earth's biosphere. Most of these explanations are based on the mechanical power of such abiological systems as plate tectonics, volcanoes, and continental drift. They believe that non-Gaian accounts can better explain, for example, Gaia's showpiece, the life-determined CO_2 thermostat. According to Gaia, CO_2 is regulated at 0.03 percent, keeping the Earth warm enough for life, mainly by trees and phytoplankton, tiny plantlike organisms in the oceans. A hotter world is a wetter one, more trees grow, more rain falls over land masses, washing more nutrients to the oceans to feed more plankton, with the greater number of trees and plankton consuming more CO_2 from the air in the form of dilute carbonic acid, which weathers the rocks by combining with silicate materials, the resulting carbon compounds flowing to the sea to rest as sedimentary rocks. The upside of this geochemical thermostat is explained by plate tectonics—the continental drift across the Earth's crust. This banging and grinding around carries the oceanic seafloor carbon sediments to the margins of the continents as the sea floor spreads, the sediments sliding under the land masses and down toward the interior of the planet, where they encounter rising temperature and pressure, the resulting reaction releasing CO_2 from the calcium carbonate that finally enters the atmosphere by way of mid-ocean ridges or volcanic eruptions, and warming up the Earth. On Mars, by contrast, this geological thermostat failed. As the CO_2 rained out of the Martian air, Mars, being further from the sun, cooled far enough so that all the water froze, and being too small a planet to provide enough internal heat to drive the mobile crusts via tectonics, the carbon has remained trapped. So Mars is cold, dry, and dead, while Earth is warm, wet, and alive, through cosmological and geological good fortune.

Lovelock's counterargument is that soil microbes, that is, life, actually control the carbon-silicate cycle, speeding up the rock weathering by producing CO_2 as they decompose organic matter, thereby producing more carbonic acid and egging on the cycle. The microbes work faster as they get warmer and thus aid weathering and removal of CO_2, and therefore cooling the planet. Soil microbes are a sensor of temperature change. "Life is a geological force," argues Lovelock.

Is this argument indicative of an unbridgeable gap between the Gaians (the biologicals) and the geochemists and geophysicians (the abiologicals)? Or is there a basis for arguing that our planet's biosphere is regulated by a complex of both geological and biological mechanisms? There are three broad positions on this question—the strong, moderate, and weak versions of Gaia, in which life respectively controls, modifies, or merely influences the global environment. Strong Gaia argues that life is crucial in regulating the environment of our planet, that the Earth has cybernetically kept its cool temperature (13° instead of the 300° predicted by planetary location) through the agency of life, which has been controlling CO_2 levels for 3.5 billion years. Weak Gaia attributes some influence on the biosphere to life but no controlling role. Moderate Gaia holds that life is one factor modifying the environment, making it significantly less extreme. Life is important but not regulatory. Holders of this view recognize Gaia (even in its strong version) as a scientific hypothesis, capable of being tested, and with

empirically testable predictive ability.

Gaia has come in from the eccentric fringe; it has left its spiritual dives. In 1988, at a prestigious biannual conference sponsored by the American Geophysical Union, the entire week was devoted to Gaia theory. (See box.) Despite the cameo appearance of a certain Brother John from the San Francisco Institute of Immortalism, this gathering of the world's most eminent geophysicists, as *New Scientist* reported, "was, by common consent, the coming of age of Gaia as a subject for respectable scientific inquiry."

The supernatural appropriation of the scientific Gaia hypothesis by the New Age is illegitimate. Just as our bodies are made up of billions of living but nonconscious cells that, thanks to our body's evolution, respond automatically to environmental factors in a way that takes care of the whole body, so with the Earth no supranatural being is required to guide the planet's biotic bits.

The genuine, and unresolved, question for the Gaia hypothesis is a purely scientific one—Does planet modification occur biologically or geologically, or through some combination of both? Even if Gaia, like many intuitively attractive, operationally elegant, and wrong theories, falls flat on its face, it will have had scientific value in bringing new insights into our understanding of the evolution of life on earth and the interplay of living organisms and their environment. Philosophically, too, it will have brought a needed self-effacement to an environmentally dangerous, because technologically powerful, self-centered species.

Of particular relevance to skeptics in the Gaian tryst of science, environmentalism, and spirituality are the parallels between the embrace of Gaia by believers in a supernatural Earth Spirit and the tendency for believers

"Gaia may be right or wrong, but it is a scientific concept, strong enough to escape the smothering embrace of the New Age, and it will live or die by the scientific sword."

in the paranormal to seek to justify their beliefs by an appeal to science (whether pseudoscience or a distortion of legitimate science). One similarity involves taking metaphor literally. To some, Gaia *means* an Earth Goddess. Similarly, the heart of quantum physics, Heisenberg's uncertainty principle (which states that you can't have your subatomic cake [the measurement of the position of an electron or an atom] and eat it too [measure its motion], or vice versa, and that thus describing its reality. [a thing with both position and motion] is dependent on the observer) is often taken, by the paranormal set, to mean that all reality, not just atomic physics, is ultimately subjective, that all truth is relative. So if you believe in numerology, auras, ESP, various energies beyond the Fab Four (electromagnetism, gravity, the strong, and weak nuclear forces) then these exist for you. Astrologers, in addition, appeal to quantum physics' demonstration of the apparent lack of causality in the subatomic world to argue that the astrological impact of the planets on human affairs can circumvent the need to demonstrate a mechanism of causation. Homeopathy, acupuncture, and other "healing" techniques attempt to elaborate a theoretical and applied science.

A second parallel between Gaia and the paranormal paradigm is that both leap to a supernatural conclusion to explain gaps in scientific knowledge.

As our body of scientific knowledge has grown, it has, paradoxically, shown us how much we don't know (as Einstein and Newton, among others, have humbly recognized). This has allowed the emergence of a Pseudoscience of the Gaps to be proposed for any phenomenon as yet inexplicable by current science. The science of the Gaia hypothesis has shown us how much we don't know about Earth's history and the regulation of its atmosphere for and by its tenants. For those predisposed to supernatural explanations, Gaia as a god fills this gap (and in the process, not so much hurdling Occam's Razor as dodging it).

The third main parallel between Gaia and the New Age concerns the eclectic nature of the New Age, which sweeps up into its wizard's hat a plethora of ideas, some of which are nevertheless valuable. Ecological and natural lifestyle practices, such as vegetarianism, for example, are often part of the New Age basket of goods but also enjoy a more reputable scientific pedigree.

As a member of the Vegetarian Society, I receive its national magazine, one which holds science and spirituality in uneasy tension. I have before me the current issue in which we are told of Thailand's annual vegetarian festival in which a firewalking medium "performs fantastic and magical feats. . . . He is able to pierce his cheeks with a sharp sword and to hit himself with heavy objects without feeling any pain. As the medium passes each house, firecrackers are thrown onto him in a gesture of respect."

Gaia, both as scientific theory and as environmental philosophy, is valuable in its own right—too valuable to be unjustly tainted by association with the New Age. Gaia may be right or wrong, but it is a scientific concept, strong enough to escape the smothering embrace of the New Age, and it will live or die by the scientific sword.

Phil Shannon (P.O. Box 186, Woden, ACT 2606, Australia) is a statistical liaison officer with the Australian Commonwealth government who has long been active in the environmental movement and long been interested in the processes and philosophy of science. This article is adapted by permission from The Skeptic *(Australia).*

The Importance of Being Unpredictable

Every important discovery in science is by definition unpredictable. If it were predictable, it would not be an important discovery. The purpose of science is to create opportunities for unpredictable things to happen.

—Freeman Dyson, "The Importance of Being Unpredictable," *From Eros to Gaia*, Pantheon Books, New York, 1992.

The Curse of the Runestone: Deathless Hoaxes

JOHN WHITTAKER

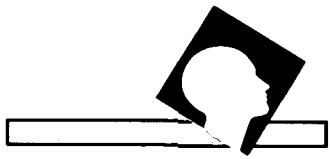
In teaching archaeology I hear various extraordinary ideas that my students and the general public pick up from the media. Trying to squelch them is like stamping on a rubber spider—it was never real, but it simply can't be killed. Particularly annoying are the innumerable instances of proved frauds that are still used as "evidence" for one silly idea or another. In fact, the mark of a really good fraud seems to be that it lives on and on even after all reasonable evidence has shown it up.

I started thinking harder about this after visiting the Runestone Museum in Alexandria, Minnesota, not long ago. This is the modern home of the Kensington runestone, "discovered" in 1898 by a Minnesota farmer. The runic inscription on it tells a dramatic story:

> Eight Goths and 22 Norwegians on exploration journey from Vinland over the west. We had camp by 2 skerries one day journey north from this stone. We were and fished one day. After we came home found 10 men red with blood and dead. Ave Maria [stone actually says AVM] save from evil. Have 10 of our party by the sea to look after our ships 14 days journey from this island. Year 1362. (Runestone Museum Pamphlet)

The stone now is enshrined in a glass case in a small museum of local history, attached (significantly) to the Chamber of Commerce. Its recent history has been almost as stormy as the story it purports to tell.

Olof Ohman, the farmer, claimed to have found the stone in the roots of a tree. In 1907 Hjalmar Holand, a Wisconsin scholar studying



The uses of the Kensington runestone in its past and modern contexts illustrate some of the reasons successful hoaxes are difficult to discredit. They fit human needs and expectations.

immigrant history, was shown the stone. Vastly impressed, he researched and publicized it, wrote books (Holand 1932; 1940; 1956) and articles, and had it sent to the Smithsonian and the World's Fair. It became a cause celébrè in the local papers and even nationally, with bitter scholarly disputes about the historical background, the linguistic evidence of the inscription, and the circumstances of the find. It was eventually acquired for display in the Runestone Museum, where it sits to this day.

To modern scholars, the Kensington runestone is insignificant, because it is quite clear that it is a hoax. A number of people have debunked it on many grounds, the most thorough being Erik Wahlgren (Wahlgren 1958, 1986; Blegen 1968). Most scholars say it is linguistically not what it should be—the runes are wrong for the date given, and the language reflects the nineteenth-century heritage of a Swedish-American farmer. The supporters prefer to emphasize Ohman's lack of education, or even stupidity, to argue that he could not have produced so sophisticated a hoax. However, it appears (Wahlgren 1958) that his possessions included a Swedish book titled *The Well-Informed Schoolmaster*, which contained a runic alphabet, as well as Montelius's *History of Sweden*, which provided information on runic inscriptions and even on the problem of Norse contact with North America. Around the turn of the century, Scandinavian schoolchildren learned about runes, and the Scandinavian newspapers in Minnesota were publishing articles on runes, Scandinavian antiquity, the Viking explorations in America, and even the sagas themselves. Such things were very much part of Olof Ohman's cultural context.

One can also think critically about the implications of the monument itself. It implies exploration of the interior of America by Vikings, a difficult task with little obvious motive. The supporters point to a brief documentary mention of an expedition to Greenland at about the right time, but there is no evidence that it actually took place; and Greenland is a far piece from the known area of Viking contact on the coast of Newfoundland. And of course it is even farther from Newfoundland to Minnesota. The stone says the Vikings were 14 days from the sea, which friends of the runestone take to mean Hudson Bay. Do a simple calculation with a map—it is a minimum of 900 miles from Hudson Bay to central Minnesota. That's if you have wings. Viking travelers are assumed to have followed the Nelson River upstream, sailed south down Lake Winnipeg, and followed the Red River and then a series of discontinuous lakes and rivers into Minnesota (Holand 1956). The real travel distance would be more than 2,000 miles. Never mind the necessary portages, difficult conditions, and wrong turns. Two thousand miles in 14 days assumes more than 140 miles a day. Hardy (and speedy) Vikings indeed!

So for all these reasons and more, the Kensington runestone is not considered to be useful evidence of Viking presence. The idea would, in fact, have died long ago but for the efforts of Hjalmar Holand. He was one of those intelligent single-minded scholars who, once they get a bee in their bonnet, never give up, regardless of the facts. But other factors help to keep the hoax alive, and it is indeed alive and well today.

The Runestone Museum presents the runestone's story as accepted fact. A short video shows costumed "Vikings" rowing ships, and recreates the finding of the runestone. A scholarly young man in the role of Holand

examines the stone with a magnifying glass and pronounces it authentic. The language of the inscription is claimed to show features that no one would have known in the nineteenth century and to have encoded in it secret messages, including the author's name, "Ivar, *not* Olof Ohman." The doubts of most scholars are mentioned only to show the struggles and persecution suffered by Ohman and Holand. The displays on the museum's walls duplicate these themes, and it is noticeable that the newspaper clippings displayed are heavily weighted toward "Scholar Pronounces Runes Genuine" rather than reflecting the other side of the controversy.

A small display case contains a few "Viking" artifacts: a couple of large axes, a couple of small flimsy ones, and a strike-a-light or fire-steel. The large axes are not weapons, but early American broad-axes. They are of course remarkably well preserved for medieval iron found in a wet climate. The two small "ceremonial halberds" have long been recognized by everyone else as tobacco cutters from a nineteenth-century advertising campaign (Wallace 1971; McKusick and Wahlgren 1980), but are still billed as Viking artifacts in the display and in the video. The fire-steel is claimed to be in Viking style, but similar forms occur world-wide and can be purchased today at "Buckskinner" meets. The video makes only a passing reference to the one good Norse site in North America, L'Anse aux Meadows (Ingestad 1971; 1977). It is not named or described. The center of the runestone room is shared by a poor model of a Viking ship that was once carried in a parade, and a rather nice though idealized mock-up of a Norse hut. The implication is that these things were in Minnesota, although the captions at least do not say so.

And so on. The purported Viking

The Kensington runestone (photo courtesy of the Runestone Museum, Alexandria, Minn.).

evidence is shockingly bad, but presented with a refreshing confidence that must sway a lot of visitors. Why bother? One reason is apparent as you drive into town. Viking Motel, Viking Auto Parts, Viking Office Supply, and numerous other "Viking" businesses catch the eye. I counted 10 of them before reaching the museum; the phone book lists 22. In the street in front of the museum, there is a huge polychrome statue of a Viking, complete with shield, spear, sword and obligatory but nonauthentic horned helmet. The museum facade features a "Viking-for-a-day" theme with a sketchy plywood longboat and a fat cartoon Viking with a face cut-out for visitor photos. Inside, the museum sells plastic Viking helmets (horned, of course), runestone mugs and cups, plastic runestone models, runic teeshirts, and a couple of books supporting the fraud (Hall 1982; Leuthner 1988). The nay-sayers are not in

evidence. My favorite item is the milk-chocolate runestone.

Well, rather obviously, one reason for the survival of the Kensington myth is commercial exploitation. Those involved in buying the stone or listed as sponsors of the exhibit include many of the major businesses in town, not just those with "Viking" in the name. But I suspect this is a secondary addition to the Kensington story. Ohman might have had profit in mind when he made the thing, but it is hard to say now. The more important reason for the Kensington stone's past and present success is its place in local culture. It is axiomatic that successful frauds fit someone's expectations, and the reason some frauds do not die is that someone still wants to believe in them. The video expresses this very well. Ohman's son is portrayed looking over the find-spot. "Yup," he says, "them boys was here all right." The video goes on to note that the runestone is part of the proud local heritage. Therein lies the key.

The importance of the runestone and its story in local heritage can be seen in the way the stone is treated as a symbolic object. In the museum room, it sits in the center facing the door, the first object to catch the eye as you enter. Spotlighted in its glass case, it is almost holy in its isolation and display. Old photos document times when, flanked by dignitaries and honor guards, it was ceremonially revealed to wondering crowds. The text is gospel too, transmitted in books, in decorative runes on the museum walls, on replicas, and carved into a granite monument 12 times the runestone's rather unimpressive doorstep size.

The cultural context, past and present, makes sense of all this. When Olof Ohman carved the stone, the Scandinavian settlers were struggling to find their place in a new country, experiencing some prejudice, and reflecting on their Scandinavian roots. In 1893 a replica Viking ship was sailed to America from Norway for the Chicago World's Fair, and several scholars were arguing that the Norse had beaten Columbus to the New World. This radical idea found great favor in the Scandinavian community, combining elements of pride in their old-world heritage of hardy viking-hood with the distinction of being the "true" discoverers of America. The runestone and other finds of the day provided an early Scandinavian heritage in Minnesota, thus legitimizing the struggles of the nineteenth-century immigrants and their claim to the land, already, according to the runestone, sanctified with the blood of their ancestors.

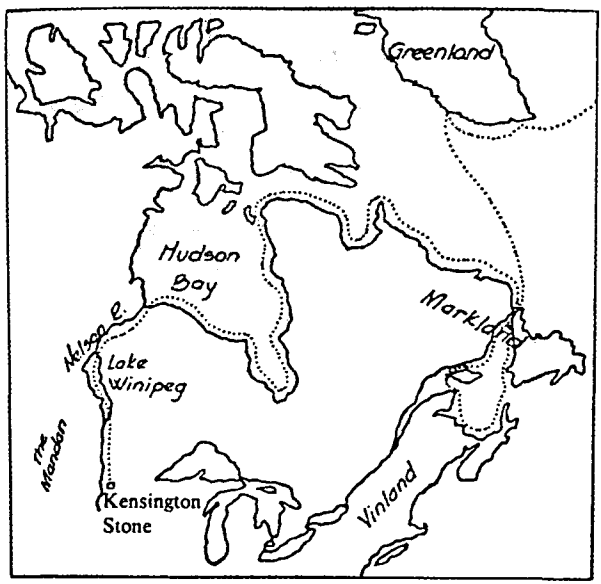
Today ethnic pride and heritage is still important, and common history, factual or mythical, helps hold a community together. The Kensington myth still retains its legitimizing value. However, one major theme has changed. In the nineteenth century, one obstacle to European settlement of the country was its native inhabitants. In some parts they were a real danger, in other places and times they were more of a symbol of struggle in the new land. The Kensington stone in fact can be seen as "documenting" an apparently unprovoked attack by savage natives on the forefathers of the Scandinavian settlers, further legitimizing their claim to disputed land. You might expect this theme to still be important—further north in Minnesota there is an ongoing and rather vicious dispute over native fishing rights on the lakes. However, a more important consideration has intervened: No one wants to emphasize ethnic disputes these days or offend potential tourist customers with controversial issues.

In the museum two murals recreate events at Kensington. Both show heavily armed but happy stereotyped Vikings carving runestones in a bucolic setting that resembles modern Minnesota. The hills are tidy and cleared, and nothing in the Vikings' faces or the background of the murals reflects the fact that the runestone is supposed to be commemorating fallen comrades "red with blood and dead."

The American Indians themselves have pretty much vanished from the story and the museum. One of the mural scenes is the backdrop for a display of stuffed wildlife in their habitat. On one hill, the Vikings, unperturbed are carving their memorial, while in the next valley a peaceful village can be seen, with natives dancing and planting obliviously. This is in rather grotesque contrast not only to the story told by the runestone, which we have no reason to believe, but also to the accounts in the sagas, which may not be true in detail, but which are probably good reflections of the historical state of affairs. Two sagas deal with the discovery of Vinland (which was not Minnesota). Both describe conflict with natives, and modern scholars suggest that this is one reason the poorly supported Norse settlements could not be maintained (Jones 1986; Magnusson and Palson 1965). Ohman may have been influenced by the sagas as well as by wanting a dramatic story line for his runestone, but the museum is not true to either saga or runestone.

At the time of my visit in 1991 the museum's small section on American Indians was closed for remodeling. It will be interesting to see what role they have when that display is set up again. Will they be part of the runestone story? I suspect not. More likely they will be included with either the natural history or the local nineteenth-century pioneer exhibits that actually make up the bulk of the museum.

The portrayal of the stereotyped Vikings—hardy male explorers, well armed but not engaged in distressing conflict—is a further reflection of how the desire to believe works. From the historical and mythical themes presented to us, we select those that support a particular view of the past, and usually that view of the past in turn supports our ideas about how the world is or ought to be now. We all do this—it is a problem with interpretations of legitimate archaeological finds, and with the way we view and teach history. George Washington never cut the cherry tree, but the image of a small, honest boy with a



Purported route of the Vikings to the site of the Kensington stone by way of Hudson Bay (photo courtesy of the Runestone Museum, Alexandria, Minn.).

The inscription on the Kensington stone (courtesy of the Runestone Museum, Alexandria, Minn.).

hatchet is not likely to go away.

Myth and history is perpetuated because it is useful in the present, and this can be seen quite clearly in the survival and death of hoaxes. Like the Velveteen Rabbit, if someone loves them enough, they live. The Kensington runestone is useful in the economic and cultural life of its community, so you do not have to rush to see it—it will be there, presented as if its story were true, for a long time. The Paluxy "man tracks" in Texas are well known to be a mix of fakes and misinterpreted dinosaur tracks, but they continue to receive dishonest publicity because they support the views of a well-organized minority. The Shroud of Turin has been known to be a fake since its manufacture and first display in the fourteenth century. Modern carbon-dating and other tests confirm this, but a lot of people, including some who pretend to be scientists, prefer to believe in an artifact that validates their religious beliefs. The UFO phenomena may or may not all be nonsense, but many hoaxes are included in the UFO canon because they fit. As others have pointed out, UFOlogy itself has good staying power because many people want to believe in powerful beings in space and use the image to bolster their own importance, warn of impending doom or moral retribution, reflect on the dangers or benefits of technology and contacts with other ways of life, and so on. The list is endless.

Some of my colleagues and students ask how I can be so critical of the believers in modern pseudoscience if, as I am suggesting, we should view their beliefs as serving functions in living societies. After all, an anthropologist is supposed to be both an objective analyst and a believer in cultural relativity. If all cultures fill human needs, are humanly valuable in some deep ways, and should be approached on their own terms, where do I get off criticizing them?

This question doesn't trouble me much, because I don't think that respecting other people and their right to believe what they want, or respecting other cultures and trying to understand how they work, means that I must give up my right to criticize them and point out flaws in what they believe. I think the pseudoscientific beliefs in my own culture do damage to people I care about. The archaeological frauds of interest to me are pretty harmless in themselves, but they are part of a cultural pattern of ignorance and uncritical thinking that disturbs me. If you believe in the Kensington runestone, no big deal; but if you go to a psychic healer to remove a cancer, you are dead. An intellectual climate that fosters one fosters the other.

I hate to end an essay on an amusing fraud like Kensington with

so downbeat a note, but that I fear is one of the lessons. Runestones, UFOs, and psychic healing all exist because someone wants them to, and because they fit and support strongly held cultural values or ways of life. For this reason, it is usually not worth trying to convert believers. As a college professor I like to feel that I can educate a few people before they become committed to pseudoscience, and show them that better-supported views of the world are just as exciting and a lot more useful. But maybe that is only part of the mythology that supports my way of life.

Perhaps I shouldn't be so down on the frauds. If you look at them in the proper spirit, they present a nice object lesson on how we use our ideas about the past. As part of our culture, we incorporate and manipulate both frauds and facts to support views that we like. So deft and unobtrusive are our manipulations that we rarely consider what we are doing. We have a right, maybe even a duty, to sort out the plausible from the worthless, and deflating hoaxes is a good way to demonstrate how evidence and scientific method can be used to evaluate ideas and discard weak hypotheses. But if we stop with the frauds, we miss the real moral, which is that all ideas, good and bad, fight it out in an arena not just of truth and evidence, but also of emotion and bias. The crowd gives thumbs up not just to ideas that perform well, but also to those they like. As scientists we hope to be objective judges, but let us not fool ourselves—we too have our curly-haired Vikings.

References

Blegen, T. C. 1968. *The Kensington Runestone: New Light on an Old Riddle.* St. Paul: Minnesota Historical Society.

Hall, R. A. 1982. *The Kensington Runestone Is Genuine: Linguistic, Practical, Methodological Considerations.* Columbia, S.C: Hornbeam Press.

Holand, H. 1932. *The Kensington Stone.* Ephraim, Wis.: privately published.

———. 1940. *Westward from Vinland: An Account of Norse Discoveries and Explorations in America, 982-1362.* New York: Duell, Sloan and Pierce.

———. 1956. *Explorations in America Before Columbus.* New York: Twayne Publishers.

Ingestad, A. S. 1971. "Norse Sites at L'Anse aux Meadows." In *The Quest for America,* ed. by G. Ashe, 175-196. New York: Praeger Press.

———. 1977. *The Discovery of Norse Settlement in America: Excavations at L'Anse aux Meadows, Newfoundland, 1961-68.* Oslo: Universitetsforlaget.

Jones, G. 1986. *The Norse Atlantic Saga,* 2nd ed. Oxford: Oxford University Press.

Leuthner, M. B. 1988. *Crusade to Vinland: The Kensington Runestone.* Alexandria, Minn.: Explorer.

Magnusson, M., and H. Palsson. 1965. *The Vinland Sagas: The Norse Discovery of America.* Baltimore, Md.: Penguin Books.

McKusick, M., and E. Wahlgren. 1980. Vikings in America—Fact and fiction. *Early Man,* 2(4):7--11.

Wahlgren, E. 1958. *The Kensington Stone: A Mystery Solved.* Madison, Wis.: University of Wisconsin Press.

———. 1986. *The Vikings and America.* London: Thames Hudson.

Wallace, B. 1971. "Some Points of Controversy." In *Quest for America,* ed. by G. Ashe, 155-174. New York: Praeger Publishers.

John Whittaker is in the Department of Anthropology, Grinnell College, Grinnell, IA 50112.

Night Terrors, Sleep Paralysis, and Devil Stricken Demonic Telephone Cords from Hell

PETER HUSTON

When traveling in foreign countries on a budget, it's ironic that some of my most memorable experiences have been those of just spending time and swapping stories with the people I met.

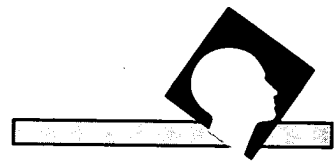
Such people tend to be very interesting in themselves and, due to the transient nature of the relationship of travelers' crossing paths, much more open than they would be under a more conventional social situation. They talk about things they normally would not mention, and since they do not plan to see the person they are talking to again, they rarely regret it.

It was under such circumstances that I heard one of the most peculiar stories I have ever had reason to believe.

I was sitting in the lounge of a low-cost hostel in Asia and found myself talking to another American, someone of about my age (early twenties, at the time), approximately the same social background, and also in Asia for the first time, intending to find work, to experience something different from the mundane life of growing up in the USA.

At some point, and somehow, the conversation turned to ghosts, spirits, and the supernatural. I said that I thought there might be something to it all and hoped to do some research on it someday.

My new acquaintance said that he did not think it was a good idea to look for ghosts, that it was his experience that "normally they



They can be bizarre, vivid, confusing, and terrifying experiences, but they're not abnormal. Here's why.

look for you."

He then proceeded to tell me the following story.

Once, back in his "angry, punk rocker" days, in a large American city, he'd gone through a period when he'd frequently been bothered by a ghost, specifically a night hag.

The attacks had started, he said, when he found himself waking up and being unable to move, completely paralyzed and with a feeling of great weight on his chest. Needless to say, he found this disturbing, and his first thought was that it was a sign of some sort of mental illness.

In time things got worse. He would awake in a paralyzed state and find himself forced to watch as an old hag entered the room, floating as she came. She would then alight on his bed and proceed to sit on his chest. He would feel a palpable wave of terror, her weight bearing down and pinning him in place, and sometimes he would experience her putrid breath as she lurched over his face. Finally, after a period of unimaginable terror, she would leave; and he would find himself able to rise and move, but in a terror-stricken state, confused and shaken up.

The "attacks by the night hag" came frequently, and he said he would have been convinced that he needed serious psychiatric help, except that on at least one occasion when he was sleeping with his girlfriend, she awoke during one of his attacks and said that she saw the night hag too. It was then that he abandoned his fears and seized upon a supernatural explanation for his experiences.

I was a bit puzzled by this story and didn't know what to make of it. The obvious explanation to me at the time was that he had just made up the story to see how I would react, but I just didn't think so. It was the way in which he'd told the story, embarrassed and unsure of the truth, beyond the reality that he had experi-

enced, unsure of the way in which I would react. Hesitant.

As time went on, much to our surprise, we found our paths crossing a couple of times more, on one occasion for a very long period of time, as we proceeded to find work, leave countries, and acquire working visas and other such things. I came to know him better and he never told any similar stories or mentioned that one again. His stories about various things were all thoroughly grounded in conventional reality, although sometimes the stranger versions thereof.

Overall, the more time that we spent together, the more he seemed like a relatively honest and normal person, lacking in the motivations for telling an imaginary story about ghost attacks.

On one occasion, when I asked him if he'd had any more experiences with spirits since he came to Asia, he looked very embarrassed, said, no, and quickly changed the subject.

In any event, I did not put his story in the same category as the church-camp ghost stories that I'd been exposed to in junior high. I spent a great deal of time puzzling over it from time to time, questioning the truth of the story itself, and looking for any possible explanations that might have been feasible.

For many years I was unable to find one and even went so far as to have a similar experience myself.

I would awake, find myself unable to move, and feel a great deal of pressure on my chest. I would struggle to move and find myself unable to do anything beyond trembling. It was a terrifying experience and like my friend my first explanation was that my mental health was going. The attacks continued night after night for almost a week. I was at a loss to explain them, fearful, and under a great deal of stress as I tried to understand what was wrong with me.

I was terrified to go to sleep at night because of my fear that I would awaken insane or go into cardiac arrest.

My wife offered the explanation that I was being attacked by the ghost of my grandmother, who had recently passed away on the other side of the world. (I live in Asia, my grandmother died in New Jersey.) I confess that I dismissed that explanation, not on any skeptical, scientific grounds but because it would seem unlike my grandmother to travel around the world to torment me for missing her funeral when many of her nearby grandchildren had missed it as well.

At this time, my wife and I had to make a decision about whether to get a telephone installed in our apartment. (In Taiwan, a telephone line often does not come with an apartment and must be installed by each tenant at a fairly high cost.) I'd been opposed to the idea, but my wife had really wanted one. Eventually, I gave in, even knowing that it would be expensive in terms of both direct costs and the charges for local and long distance phone calls.

Ultimately, I again awoke unable to move and finding that the telephone cord somehow became draped over my body and was in the process of electrocuting me.

In time it was over. I was able to move again, but I was quite confused and upset. I was thoroughly agitated and very angry with my wife for not noticing that I'd been shaking and suffering from this terrible experience.

I was even more confused to discover that the telephone cord was far on the other side of the room, and it was physically impossible for it to have become draped over my body, even if someone had been inclined to pick it up and put it there.

I became convinced that I was

suffering the beginnings of some sort of mental breakdown and phoned my parents. My father told me that there had been occasions when he had awakened and been unable to move. He had thought it very strange until he mentioned it to his brother, who said that he'd had similar experiences.

This conversation was a major relief to me, and it was followed by a cessation of such attacks.

I filed these experiences away until I stumbled across a scientific explanation for them.

What my friend and I were experiencing is often referred to as "night terror." My friend's were more like the classic variety, complete with a night hag, while mine was more unusual, involving a "demonic telephone cord from Hell." Such experiences, disturbing and frightening as they may be to the unsuspecting participants, are relatively benign and fall easily within the realm of the "explained" when understood properly.

Such experiences consist of two aspects. The first is sleep paralysis. This is a relatively normal condition characterized by awakening to find oneself unable to move. Although it is one of many indicators of the mental illness narcolepsy, normally, in the absence of other problems, it is a fairly unimportant, relatively common condition.

When one is asleep certain portions of the brain effectively are inhibited and cease to function at their normal level. One of these inhibited functions is movement. With the obvious exception of sleepwalkers (who fall well outside the scope of this article), gross muscle movement is inhibited for sleepers as a normal process. In the case of sleep paralysis, the person awakes before his brain can readjust itself and allow for normal, uninhibited movement. It is seen to be the extension of a sleep phenomenon into the waking period. Reportedly people can be snapped out of sleep paralysis by being touched or hearing their names spoken. In the absence of outside stimulation normal sleep paralysis is of short duration and self correcting.

A closely related and on occasion concurrent phenomenon is hypnopompic hallucinations. These occur when one awakes but hallucinates and sees imagery. At times these images can be vivid and bizarre and of a frightening quality. My friend's ghost and my electrifying telephone cord are both examples of these. Although both had strange, unbelievable qualities, they were both vividly seen, vividly experienced, and believed by the experiencer at the time, and very confusing to the victim upon the cessation of the experience.

The ability to question subjective reality is another brain function that is inhibited during dreaming. Hence the bizarre but unquestioned nature of conventional dreams. This inhibition of the reality-checking function of the brain apparently also extends into the period of hypnopompic hallucination. In some cases, this can lead to intensified emotion, such as terror, and this is the conventional explanation for such experiences. Although the experience of finding oneself paralyzed and possibly insane is frightening in itself, researchers feel that the terror often felt is due to reasons beyond this.

Hypnopompic hallucinations can involve any or all of the senses, but are most commonly visual or auditory. Such hallucinations are normally not shared. I assume my friend's girlfriend said that she had also seen the "ghost" to appease him. Or possibly she actually thought that she saw something. In any event, never having met her, I have no idea how she would

respond when faced with a distraught, confused person who feared for his mental health.

Such hallucinations, and the related phenomenon of hypnogogic hallucinations (which occur just *prior* to sleeping), are not uncommon in children. Thus, when children say they see monsters at night at a time they should be sleeping, they just might really think they are seeing them.

Such experiences have a great deal of relevance to investigators of "unexplained phenomena," not just to those interested in "ghosts" and their supernatural entities. They also provide insight into many cases of "UFO abductions" and similar phenomena. Psychologist Robert A. Baker has suggested hypnopompic hallucinations as the explanation for the experiences described by Whitley Strieber in *Communion*. Strieber claimed to have been abducted and manipulated by little fetuslike-looking men who sneak into his bedroom repeatedly, and ultimately cause him a great deal of distress—and financial gain—by their actions. (This is one of several explanations advanced for this book.)

Budd Hopkins, author of *Missing Time* and one of the foremost proponents of the alien-abduction hypothesis, discussed several such reports in a recent *Omni* magazine article. At least three of these involved children, or adults remembering childhood experiences, seeing aliens or other weird strangers in their bedrooms before going to sleep. Hypnogogic hallucination is an obvious direction for such an investigation and it is one prominently absent from the article.

In *Traditions of Belief*, a study of supernatural beliefs among middle-class women in today's England, by Gillian Bennett, there are many other stories involving strange people in children's bedrooms. These are cited by adults as memories that convinced them that there might just be something to "the mysterious side of life." These experiences might be more easily explained as hypnogogic hallucinations.

In the excellent collection of essays *Phenomenon: Forty Years of Flying Saucers*, Mark Moravec discusses hypnopompic/hypnogogic hallucinations as they may relate to UFO sightings. The author states that such hallucinations may explain many UFO-related phenomena that involve tired drivers and people who awake to find strange things, like lights outside their windows and little creatures in their rooms.

The possible images from hypnopompic hallucinations can be of virtually anything that a person might dream about. Obviously culturally determined UFO phenomena, ghost sightings that frequently involve "night hag"-type terrors, or the less hostile images of recently deceased acquaintances (who have been known to provide information that only "they" would know, hence supposed proof of their supernatural origin), fairies, goblins, weird creatures, bright lights, are all possible, just as I experienced the bizarre demonic telephone cord from Hell.

It is important to understand that such phenomena are not a sign of mental weakness or illness, but are often experienced by people of unquestioned sanity (and me too on one occasion). Anyone seeking to understand paranormal phenomena should be aware of this normal human experience.

Bibliography

Baker, Robert A. 1987. The aliens among us: Hypnotic regressions revisited. SKEPTICAL INQUIRER, Winter 1987-88.

Bennett, Gillian. 1987. *Traditions of Belief.*

London: Penguin Books.
Carlson, Neil R. 1986 [1977]. *Physiology of Behavior*. Boston: Allyn and Bacon.
Hobson, J. Allan. 1988. *The Dreaming Brain*. London: Penguin Books.
Hufford, David J. 1982. *The Terror that Comes in the Night*. Philadelphia: University of Pennsylvania Press.
McCarthy, Paul. 1990. True confessions: The unbearable pain, sorrow, and terror of alien abduction. *Omni*, December.
Moravec, Mark. 1988. "Is There a UFO State of Mind?" In *Phenomenon: Forty Years of Flying Saucers*. ed. by John Spencer and Hilary Evans. New York: Avon.
Pachulski, Roman. 1990. *Psychiatric Notes*. London: Prentice Hall International.
Reed, Graham. 1988. *The Psychology of Anomalous Experience*. Buffalo: Prometheus Books.

Peter Huston is a teacher of English as a second language and writer currently living in Taiwan.

To preserve your copies of
Skeptical Inquirer

Order handsome and durable library binders $7.95

Please send me _____ Skeptical Inquirer Binders. Total $_____
(plus $1.50 for one, 50¢ for each additional binder, for postage and handling.)

Visa and MasterCard customers call **Toll-Free 800-634-1610**
(In NYS call 716-834-3222)

☐ Check or money order enclosed

Charge my ☐ MasterCard ☐ Visa

_____ Exp. _____

Name (PLEASE PRINT)

Address

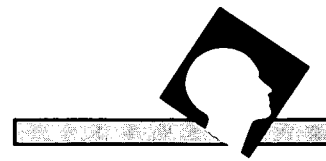
City State Zip

Skeptical Inquirer • Box 703 • Buffalo, NY 14226-0703

Scientific Creationism: The Social Agenda Of a Pseudoscience

STEVEN N. SHORE

In 1859, Darwin described the origin of species and provided the critical theoretical tool, natural selection, with which the diversity of life can be understood. In 1992, it is still obligatory in many school systems in the United States to teach the individuality of species and the principle of special creation along with evolution in high school biology classes. The intervening years have seen the tide of many efforts with an anti-evolutionary or theologically fundamentalist slant ebb and flow over American public opinion.



How did the creationist movement reach the status it enjoys today?

How did the creationist movement reach the status that it still enjoys in this country? I believe that the answers lie in several directions, all of which are important for a deeper understanding of how a belief system is born, augmented, and institutionalized. One of the failures of the early anti-evolution movement, the one that very likely forced its retreat, was its inability to attain academic respectability. Yes, it continued to hold sway among the fundamentalist sects in the United States and abroad, and it continued to exert political influence at the populist level. But it was unable to maintain the early gains it had made against the teaching of evolution. During the 1960s, one of the greatest reforms of the U.S. educational system in a century was effectively mounted by the National Science Foundation. The entire science curriculum was revised, modernized, and made more rigorous. No field was overlooked. In physics and chemistry, contemporary theory and experiments were included for the first time, bringing students closer to an understanding of the microphysical world. In geology, the evolution

of the earth and solar system were stressed. And in biology, evolution became the foundation for teaching about the natural world. Genetics and molecular biology were rapidly included in textbooks, and it seemed that the path would lead to a well-educated public, capable of judging the significance of scientific advances in their daily lives.

In the background, however, a new movement had formed, galvanized around the 1961 publication of *The Genesis Flood*, by theologian John Whitcomb and engineering professor Henry Morris. The book was subtitled "The Biblical Record and Its Scientific Implications." Purporting to be a scholarly work, its main thrust was to attack evolution by cataloguing conundrums, paradoxes, and incorrect explanations, and making contradiction proof of incorrectness. This was the beginning of the movement soon to be called "creation science." Within a few years, by the mid-1960s, the Institute for Creation Research was formed, in association with Christian Heritage College, run by one of the co-founders of the Moral Majority, Tim LaHaye. The creationist movement had mutated into a new entity, not anti-evolutionary in its intent so much as publicly desirous of voicing a "reasonable alternative" to the secular humanists, who had allegedly co-opted the education of the nation's youth and subverted the educational system with their unsupported ideological program. Duane Gish, an industrial biochemist, joined ICR in 1971 and published the principal biological arguments in *Evolution: The Fossils Say No!* This was an enormously successful ICR book. The ICR board of directors was composed of engineers and scientists with university graduate degrees. They began a well-organized effort to present the teaching of special creation as a legitimate alternative to the "dogmatic" evolutionary doctrine, a new strategy that proved extremely successful.

This egalitarian argument appealed to people's sense of fair play and to an egalitarianism that, the creationists and their supporters argued, lies at the heart of the American character. The argument empowered people who felt themselves distanced from their beliefs by an increasing reliance on technology and science, allowing them to publicly oppose the secularization of American education with seemingly scholarly arguments.

By the late 1970s, their efforts had met with approbation in many quarters, well documented in Dorothy Nelkin's *The Science Textbook Controversies and the Politics of Equal Time.* The California Board of Education adopted an equal-time model for its curriculum, and the textbook publishers followed suit. The curriculum was watered down; statements that had previously been unequivocal in their evolutionary intent were altered to imply the existence of alternative interpretations without giving specific details. As a result, students were left with an uncomfortable feeling that there was a great debate going on without their being privy to any of the particulars. To maintain and exploit this confusion, the ICR staff began in the late 1970s to take to the road, organizing public "debates" on the question of creation vs. evolution. Not since the Huxley-Wilberforce confrontation in 1860 had there been anything like it. Scientists were at a singular loss in these public debates, their rhetoric and style being unsuited to such forums. Not until the recognition of the creationist agenda of the debates, and the increased familiarity of the scientific community with the tactics and discourse of the creationists, did these events produce anything but a dismal rout of the scientists.

The failure of the creationists' legislative agenda was first signaled by Judge William Overton's landmark decision in Arkansas in 1982 against the state's equal-treatment law. Overton ruled that creationism was only thinly veiled religious dogma and not worthy of inclusion in the science curriculum. The several other states that had passed such equal-treatment laws were not directly affected by the Arkansas decision, and what had seemed a legal juggernaut was not effectively slowed. In many of the states the laws still remained on the books, but they fell into disuse, or so it seemed. In 1985, the U.S. Supreme Court refused to hear the appeal of creationists in their attempt to reinstate the overturned Louisiana law; and faced with increased opposition to this effort, the creationists abandoned their attempts to achieve legislatively what they had not been able to gain by scholarship.

The movement did not fold, however, any more than it had after the Scopes trial in the 1920s. ICR is well organized, owns a publishing house, and continues to issue monthly tracts on its efforts. Creationists have made inroads into smaller school systems. Creationists have been fielded as school-board candidates, although they do not generally make their intentions public until elected. Despite the disapproval of the ICR graduate program by the California Board of Education, many individuals have received teaching credentials and graduate degrees from ICR programs. In fact, the ICR graduate program's accreditation has recently been reinstated. Although in recent years the Texas and California school boards have demanded a return of the centrality of evolution to the science textbooks, publishers have been reluctant to comply and textbook review has been lax at best, as beautifully documented by Richard Feynman in his autobiography (where he recounts his tenure on the California Textbook Review Board). Ronald Reagan explicitly approved the movement in his notorious comment about his grave doubts about the theory of evolution. The growth of the home-schooling movement and the presidential initiatives on educational vouchers have all been very useful for the creationist.

It appears that there is a new growth of public interest in the creation/evolution question, since debates are once again being proposed by the creationists. This time, the scientific side can draw on more experienced advocates, but they are arguing against a belief system that excludes their standard of proof. And this we must recognize as the source of the problem. Science often provides answers that are at variance with normal life experience. So, of course, do the paranormalists and the pseudoscientists. Since the answers are counterintuitive, their acceptance often depends on the preparation of the soil into which the ideas are planted. The creationists can tap the whole cluster of religious beliefs connected with biblical prophecy, genealogy, and morality. Scientists cannot. The cultural basis of this country's collective morality is said to rest on the Judeo-Christian ethic, and therefore on the truth of the source of those teachings. So the debate over evolution vs. special creation takes a moral tone. The creationists, especially Gish, point to secular humanists and their evolutionary philosophy as the cause of the worst fears of modern society—of drugs, crime, and the destruction of the "traditional family"—fears of an electorate that is increasingly conservative on the one hand and increasingly apathetic on the other.

It is this same parallel universe that

feeds the public appetite for the paranormal and makes it satisfying to a wide audience. Not that most paranormalists can, or do, invoke morality on behalf of their claims, but that organizational and systematizing properties of paranormal beliefs, like religious beliefs, are very powerful. Scientific creationism is just a trick for making fundamentalism socially acceptable. Parapsychology legitimizes prophecy. Past-life regression scientifically supports the cross-cultural belief in reincarnation and the immortality of the soul. In a world where quantum mechanics can be applied to crystals to produce either semiconductors or mystic healing, we must strengthen people's understanding of the nature of the scientific enterprise, not just the trivial recitation of its products. This is the central lesson of, and the central weapon against, scientific creationism.

Bibliography

Gish, D. T. 1979. *Evolution: The Fossils Say No!* San Diego: Creation Life Press.

Godfrey, L. R., ed. 1983. *Scientists Confront Creationism.* New York: Norton.

Montagu, A., ed. 1984. *Science and Creationism.* Oxford: Oxford University Press.

Morris, H. M., ed. 1974. *Scientific Creationism.* San Diego: Creation Life Press.

Nelkin, D. 1982. *The Creation Controversy: Science or Scripture in the Schools.* Boston: Beacon Press.

———. 1977. *Science Textbook Controversies and the Politics of Equal Time.* Cambridge: MIT Press.

Whitcomb, J. C., and H. M. Morris. 1961. *The Genesis Flood.* Grand Rapids, Mich.: Baker.

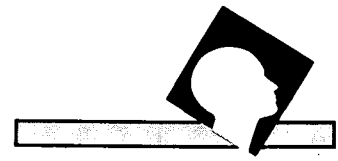
Steven N. Shore is an astronomer and physicist at the NASA Goddard Space Flight Center, Greenbelt, Maryland, and is a consulting editor of the SKEPTICAL INQUIRER.

OUT THERE Rob Pudim
SATURN IS IN PISCES BECAUSE IT HAS A SIDEREAL ORBIT OF 29.46 YEARS AND AN ECCENTRICITY OF 0.06 WITH A 2.5° TILT.
ARRRGH!
GASP!
URP!
MOAN!
THE DETOX WARD AT ASTROLHOLICS ANONYMOUS

Observing Stars During the Daytime: The Chimney Myth

RICHARD SANDERSON

A belief has come down through the ages that stars can be glimpsed in daytime if the observer peers at a small section of sky from the bottom of a tall chimney or a deep well. The chimney or well supposedly shields the direct light from the sun. This reduces the amount of light entering the eye, causing the eye's pupil to open as it does at night, allowing more light to fall upon the retina.



It's an old idea, and an appealing one. But does it work?

One day nearly 20 years ago, while I was working as a teenage apprentice in the planetarium at the Springfield (Massachusetts) Science Museum, several colleagues and I got into a discussion about this old belief. We were overheard by the museum's director, the late Frank Korkosz, and he invited us to settle the question by performing an observation. Korkosz led us down into the museum's basement to the base of a tall, narrow chimney. A small door near the floor allowed access to the chimney—it was just big enough to stick your head through. I recall a feeling of wonder at the prospect of seeing the nighttime stars simply by looking upward through this long shaft.

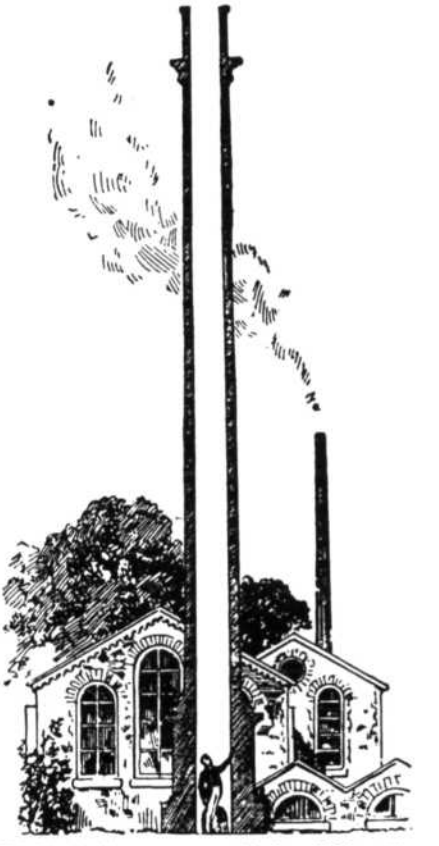
The idea that stars can be seen during the day dates back at least to the time of Aristotle in the fourth century B.C. Aristotle wrote that stars had been seen in broad daylight by persons looking at the sky from deep within a cavern. Pliny, who lived nearly 2,000 years ago, had heard that a similar phenomenon occurred when the sky was observed from the bottom of a deep well. This concept found its way into literature, thanks to writers like Kipling, who wrote about "the gorge that shows the stars at noonday clear," and Dickens.

Alexander von Humboldt, the noted German scientist and naturalist, repeatedly tried to observe stars during the daytime from mines in Siberia and America. He failed every time.

Even the great astronomer Sir John Herschel had heard of this belief. He knew an optician who became interested in astronomy after observing the "regular appearance at a certain hour for several successive days, of a considerable star through the shaft of a chimney." This, of course, was secondhand evidence, and it appears that Herschel never bothered to repeat the observation for himself.

Astronomer E. Walter Maunder, writing at the turn of the century, described the chimney myth as a "widespread tradition." This myth no doubt was perpetuated by such accounts as the following, which appeared in Sir Robert Ball's popular 1889 book *Star-Land:* "[The stars] can sometimes be seen in daylight in rather an odd way. If you can obtain a glimpse of the blue sky on a fine day from the bottom of a coal pit, stars are often visible. The top of the shaft is, however, generally obstructed by the machinery for hoisting up the coal, but the stars may be seen occasionally through the tall chimney attached to a manufactory when an opportune disuse of the chimney permits of the observation being made. The fact is that the long tube has the effect of completely screening from the eye the direct light of the sun. The eye thus becomes more sensitive, and the feeble light from the stars can make its impression, and produce vision."

The stars do shine in the daytime sky, but they are completely overpowered by the brilliant glare of the sun and the atmospheric scattering of sunlight. In space, where there is no air to scatter the sun's light and brighten the sky, the sky is black and



This illustration appeared in the 1899 edition of Sir Robert Ball's 1889 book *Star-Land*, with the caption "How the stars are to be seen in broad daylight."

stars can be seen near the sun. But let's confine our discussion to the earth's surface.

Venus, the brightest of the planets as viewed from earth, is occasionally visible during the day. I once sighted Venus during an early summer afternoon from the mountaintop site of the annual Stellafane telescope-maker's convention in Springfield, Vermont. The sky was unusually transparent that day and appeared deep blue, with Venus shining as a tiny pinpoint of light if you knew exactly where to look. Sirius, the brightest star in the nighttime sky, was above the horizon at the time but remained invisible.

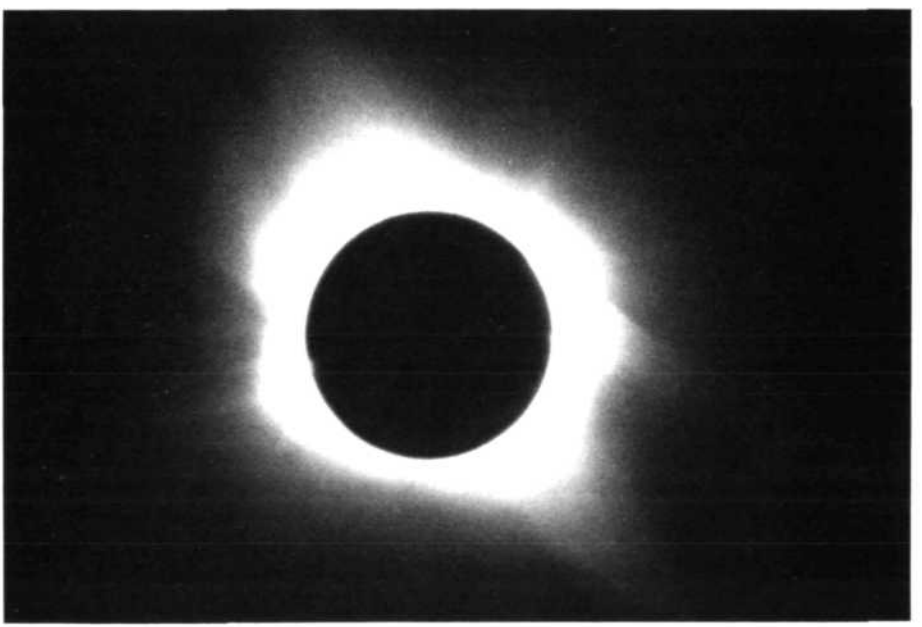
Venus blazes about ten times brighter than Sirius.

Some observers claim to have observed Jupiter with the naked eye in the daytime sky. Since Jupiter shines almost twice as brightly as the star Sirius, we cannot rule out the possibility that under ideal conditions, such as from a high mountain summit, a couple of the brightest nighttime stars might barely be visible during daytime. However, I've never heard of an observation that verifies this.

There are rare circumstances when one or more stars can become visible during the daylight hours. When an aging star explodes in a gigantic cataclysm known as a supernova, its brightness can increase millions of times until it becomes a daylight object. The supernova observed by the Chinese in 1054 was seen in the daytime sky for several weeks. Nearby supernovas are extremely rare, and nobody alive has ever seen one.

Astronomers have long known that stars can be glimpsed during the day through a telescope. Stars are so distant that they appear as pinpoints in ordinary telescopes, regardless of the magnification. High magnification reduces the "surface brightness" of the sky by spreading a tiny section of sky across the telescope's large apparent field of view, and this increases the contrast between the star and the background sky, rendering the star visible.

A total solar eclipse affords the only opportunity to observe stars sprinkled across the daytime sky. During totality, when the moon completely covers the sun's disc, the brightest stars can easily be seen twinkling in the dark blue sky. The darkness of the July 11, 1991, total eclipse revealed bright winter stars like Sirius, Betelgeuse, and Capella. A total solar eclipse produces this effect because the sun's light is blocked before it enters the



Total solar eclipses provide unique opportunities to view stars spinkled across the daytime sky. This photograph, taken by the author at the July 11, 1991, total eclipse from Baja California, shows the beautiful solar corona surrounding the moon's silhouette.

earth's atmosphere. You can block out the sun's disc simply by holding up your thumb, but by the time the sunlight reaches your thumb, part of it has already been scattered by air molecules to give the sky its bright blue luster.

I experienced feelings of exhilaration and intense wonder when I saw stars in the daytime sky for the first time, during the total phase of the 1973 total solar eclipse in Kenya. Anyone who has witnessed a total eclipse cannot fail to be moved by this "forbidden" view of the nighttime stars. This phenomenon was described by a teenage sailor named James Fenimore Cooper, who was destined to become a famous author, when he observed the great total solar eclipse of June 16, 1806, from his home in the Finger Lakes region of New York State. Years later Cooper wrote:

> Looking westward a moment, a spark appeared to glitter before my eye. For a second I believed it to be an optical illusion, but in another instant I saw it plainly to be a star. One after another they came into view, more rapidly than in the evening twilight, until perhaps fifty stars appeared to us, in a broad dark zone of the heavens, crowning the pines on the western mountain. This wonderful vision of the stars, during the noontide hours of day, filled the spirit with singular sensations.

Because of the relative sizes of movements of the earth, moon, and sun, the absolute maximum duration of totality during a total solar eclipse is only 7 minutes 31 seconds. In addition, the spectacular total phase of an eclipse can only be seen by individuals situated along the path of totality, the path of the moon's shadow across the earth, which is generally 50 to 200 miles wide and thousands of miles long. Even though a total eclipse occurs once every year or two, the path of the moon's shadow often falls upon remote parts of the globe, making this a rare spectacle.

The ability to see stars in the daytime sky is an exotic and captivating concept for most people, which may account for the popularity of the chimney myth. The myth itself may have been born when someone looked upward through a chimney or a well and mistook Venus, which can be seen during the day, for a star. This would certainly explain the observations made by Herschel's optician friend.

As Korkosz stood watching, I looked upward through that museum chimney 20 years ago and saw a brilliant circle of sky surrounded by the inky blackness of the chimney interior. The pupils in my eyes did dilate, for the tiny section of visible sky was almost blindingly bright. I immediately realized that I would never see stars during the daytime by using this technique. As we left the museum's basement, Korkosz reminded us that there is only one star that can easily be seen during the daylight hours of any clear day, and that is the nearest and most important star, our sun!

Bibliography

Ball, Sir Robert Stawell. *Star-Land.* Boston: Ginn & Co. 1899 (revision of 1889 edition).

Cooper, James Fenimore. "The eclipse" *Putnam's Magazine,* September 1869.

Maunder, E. Walter. *Astronomy Without a Telescope.* London: Knowledge Office, 1902.

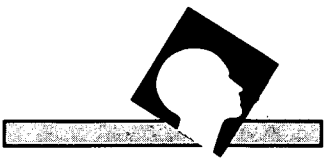
Rao, Joe. *Your Guide to the Great Solar Eclipse of 1991.* Cambridge, Mass.: Sky Publishing, 1989.

Richard Sanderson is an avid amateur astronomer and past president of the Springfield (Massachusetts) Stars Club. He is an astronomy columnist for the Springfield Journal. *Address: P.O. Box 54, Monson, MA 01057.*

Does an Ancient Jewish Amulet Commemorate the Conjunction of 2 B.C.?

DAVID P. RUBINCAM

On the evening of June 17, in the year 2 B.C., low in the western sky the planets Jupiter and Venus appeared very close to each other—perhaps close enough to be considered, however temporarily, a "star." The date of this conjunction is of course near that traditionally given for the birth of Christ. The nearness of the date, together with the fact that the two planets may have been so close that their disks overlapped (DeYoung and Hilton 1987), led Roger W. Sinnott to speculate that the conjunction was in fact the Star of Bethlehem (Sinnott 1986).



The amulet shows a crescent moon, but the moon was full at the time. That's just one problem.

Sinnott also speculated that an ancient Jewish amulet, believed to be from the early centuries of the Christian era, commemorates the conjunction. He found a drawing of the amulet in Erwin R. Goodenough's monumental *Jewish Symbols in the Greco-Roman Period*, a multivolume monograph whose title well explains the contents. The drawing, taken from volume 3 (Goodenough 1953b), is reproduced here as Figure 1. It shows a star between the feet of a lion. Since the conjunction took place in the constellation of Leo the lion in just this position, Sinnott would appear to have a case. Further investigation, however, casts doubt on this interpretation of the amulet.

A slight reason for doubt is the object in front of the lion. Goodenough (1953a: 260) says, "The lion is probably eating lamb or a calf," even though to a naive eye it looks as though the lion is drinking through a straw from a water

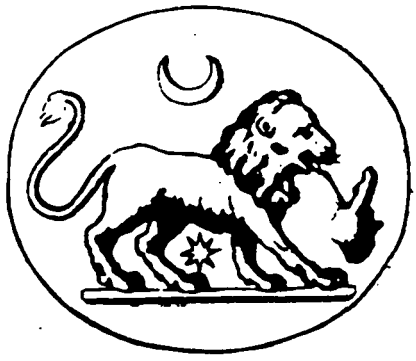


FIGURE 1

FIGURE 2

FIGURE 3

These four illustrations are from Erwin R. Goodenough, *Jewish Symbols in the Greco-Roman Period.* Copyright ©1953 by P.U.P. © renewed. Reproduced by permission of Princeton University Press.

skin. Whatever the object is, the usual drawings of Leo do not contain anything but the lion. But this is weak evidence.

Of more moment is the crescent moon shown above the lion. If there was a new moon in Leo at the time of the conjunction, then this would certainly lend support to Sinnott's speculation. The moon, together with the planets, would have been a beautiful sight and worthy of commem-

oration.

The problem is that the moon was full on the evening of June 17, 2 B.C., and nowhere near Leo. In fact, the moon would have been rising in the east while the conjunction was setting in the west. Since it would have been odd of the amulet-maker to throw in the wrong phase of the moon for such a memorable event, the identification with the conjunction seems dubious.

Perhaps the most compelling reason for doubt is the existence of other Jewish amulets from the same period. A perusal of the very volume from which Figure 1 is taken shows other star and moon combinations. The amulets shown in Figure 2, for example, each display a star and a crescent moon with creatures that are clearly not constellations of the Zodiac. Further, the star and the moon seem to be positioned for reasons of artistic symmetry and not for the depiction of actual astronomical events. Also of interest in Figure 3, which shows a lion, a crescent moon, and *seven* stars, rather than just one. Other drawings (not shown) from Goodenough's many volumes show what appear to be stars *inside* the crescent moon, an astronomical impossibility.

And is the "star" really a star?" Goodenough (1958: 194) says of one of his figures, ". . . In the middle is the 'star and crescent,' a design I take normally to be the moon and sun. . . ." Describing the amulet in question, he says, ". . . Lion with star (sun) and crescent . . ." (Goodenough 1953a: 260). So the "star" may be the sun. Evidence against his point of view is the lion with the seven stars. The seven "stars" may be the seven known planets, as Goodenough (1953a: 258) himself states. Or they may simply be seven stars, because seven was a mystical number in the Jewish faith. In any case, it would be strange to show a lion surrounded by seven suns.

Another possibility is that the "star" is the planet Venus by itself. The crescent moon and Venus are often conspicuous together in the morning or evening sky. Moreover, the star and crescent combination is much older than 2 B.C. Schaefer (1991) has traced depictions back as far as 2500 B.C.

Where does all this leave the original amulet? We can say that it depicts a lion, which may be Leo, with the crescent moon and a "star," which could possibly be the sun or Venus. Probably the star and the moon are centered in the figure for reasons of artistic symmetry, just as they are symmetrically offset in the amulets shown in Figure 2. This, together with the fact that there was no crescent moon in Leo on June 17, dims the chances that the amulet commemorates the conjunction of 2 B.C.

I thank James Hilton of the U.S. Naval Observatory for verifying that the moon was full at the time of the conjunction of 2 B.C.

References

DeYoung, James A., and James L. Hilton. 1987. Star of Bethlehem. *Sky and Telescope*, 73: 357-358, April.

Goodenough, Erwin R. 1953a. *Jewish Symbols in the Greco-Roman Period*, vol. 2. New York: Pantheon.

———. 1953b. *Jewish Symbols in the Greco-Roman Period*, vol. 3. New York: Pantheon.

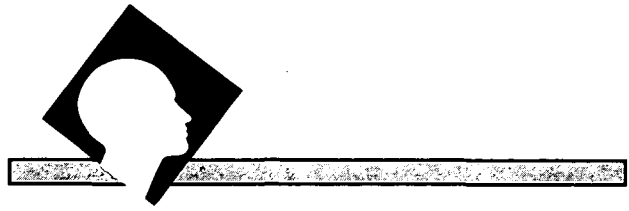
———. 1958. *Jewish Symbols in the Greco-Roman Period*, vol. 8. New York: Pantheon.

Schaefer, B. 1991. Heavenly signs. *New Scientist*, December 21/28, pp. 48-51.

Sinnott, Roger W. 1986. Computing the Star of Bethlehem. *Sky and Telescope*, 72: 632-635, December.

David P. Rubincam is with the Geodynamics Branch, Code 921, Laboratory for Terrestrial Physics, NASA Goddard Space Flight Center, Greenbelt, MD 20771.

Book Reviews



Vampires: The Good, the Bad, and the Just Plain Ugly

Vampires Among Us. By Rosemary Ellen Guiley. Pocket Books, New York, N.Y., 1991. 270 pp. Paper, $4.99.

Vampires, Burial, and Death: Folklore and Reality. By Paul Barber. Yale University Press, New Haven and London, 1988. 236 pp. Cloth, $30.00. Paper $9.95.

PETER HUSTON

It is not just coincidence that at about the time I discovered well-researched, scientific-minded publications explaining supernatural and paranormal phenomena, I not only became interested in science but also began enjoying bad low-budget horror movies again. So it was with great interest that I read two nonfiction investigations into vampire phenomena.

As for the first, *Vampires Among Us*, by Rosemary Ellen Guiley, most readers of this journal should be reasonably familiar with this sort of product, and I think *product* is an appropriate word.

This kind of thing starts with a professional writer who writes a considerable amount about psychic phenomena, reincarnation research, and other mysterious happenings. He or she then embarks on another book, surveying and condensing the more interesting literature on the subject. The writer interviews the more outspoken believers in the field and repeats what they have said. Such writers are usually fond of statements like "We all, ultimately, determine our own reality" and "Who can determine what is really true?" Ultimately the book becomes a paperback.

The only thing that makes *Vampires Among Us* stand out in the crowd is its unique subject, something that the author terms "Vampire Reality." Unfortunately, she never says what Vampire Reality really is, but apparently assumes that the reader will understand. I never did catch on, I'm afraid.

The book has ten chapters, covering a wide variety of disparate vampire-related phenomena. Among the subjects discussed are a survey of vampires in movies and historical legends; a few local modern-day folklorish tales concerning vampires and vampirelike ghosts; a group of evil, vampirelike spirits who manifested themselves through a Ouija board and possessed some high school girls; and some people who have had

incredibly realistic dreams about vampires.

Chapter 5 covers a 1970 vampire panic in a London cemetery that culminated in a media circus, with a man named Sean Manchester allegedly killing a vampire with a wooden stake. Manchester has published two contradictory accounts of his story.

Chapter 8 deals with stories about "psychic vampires," human and otherwise, who exist by draining off people's "psychic energy" with no physical attack involved. Like the book itself, these reports show little consistency, documentation, or depth. The concept of what this psychic energy might be is left completely unexamined.

At times, rather than arguing for the existence of any sort of vampires, the author appears to be surveying belief in vampires in present-day England and America through a series of interviews with believers and devoted vampire fans. I found these interviews disturbing and ultimately depressing. The social context was often difficult to get a handle on. The subjects appeared to be a long line of confused, pale people united in their wish to become genuine undead vampires, and in their love of horror movies and the Anne Rice fictional vampire series. These people did generally seem to believe in the reality of vampires, often claiming to be in contact with them, but the book makes no attempt to follow up on these claims.

When the author attempts to go beyond reporting others' claims, she does not do well. For instance, she makes mistakes in her descriptions of lucid dreaming and attacks of the "night hag," a peculiar form of sleep paralysis and hypnopompic hallucination. There are also sections where she expounds on "psychic self-defense" and "psychic vampires." The reader is left in the dark about the sources of these statements and who believes them. Were they the author's personal opinions or were they derived from her reading? Did they result from some sort of research claim from some shadow science? There's no way to know.

Although the book is labeled "nonfiction," I think the giveaway of the intended audience lies in the final pages, where Pocket Books advertises its Occult Fiction list. Last summer I read Stephen King's vampire thriller, *Salem's Lot*. I suggest that those looking for undocumented vampire thrills read that instead.

Although I did not expect *Vampires Among Us* to convince me of the reality of vampires, I had expected to enjoy it. I had hoped for a collection of documented, interesting historical and contemporary incidents that might resemble a vampire legend. I had expected these to be tied together with some clever arguments explaining how vampires might exist in today's world and what they could be, whether undead, living, or disincarnate spirits, or otherwise. With a little luck these incidents and arguments might have provided some mysteries to try to solve and perhaps to find more conventional explanations for. They did not.

For those who desire to investigate vampire legends in a rational manner, however, I suggest they read Paul Barber's *Vampires, Burial, and Death: Folklore and Reality*. Barber traces the substance and spread of the vampire legends of Eastern and Middle Europe. Such beliefs, like those in witchcraft and werewolves, were often taken quite seriously and could cause panic over wide regions. The author then tries to determine what could cause rational, thinking people to believe they were being stalked by "undead"

Illustration from *Vampires Burial, and Death*, by Paul Barber.

beings.

Barber is a folklorist who began to suspect that many European vampire legends and scares could be attributed to a poor understanding of the spread of disease and the behavior of decomposing human bodies.

For instance, someone in a peasant village might get sick and die before his or her intended time, and this might be followed by other deaths. The inhabitants, at a loss to explain such happenings, might blame the first person to die, who they believe may have become a vampire. They would then dig up the body and discover that it was not stiff, as they had expected, but was bloated and had blood on its mouth. The peasants would then drive a stake into the body, and there would be a terrible stench and a horrible scream.

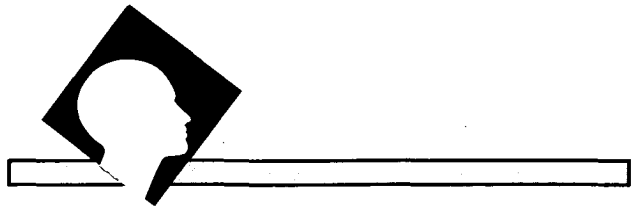
One scientific explanation would be that the first victim might merely be the first caught by a minor plague. Surprisingly, dead bodies do not remain stiff; after a period of time they return to limpness. Also, as the body begins to decompose gas is produced and the body becomes bloated, often driving red bloodlike liquid out of the mouth. When a stake is driven into such a body, it will often drive gas up through the larynx and produce a screaming noise as well as a strong stench.

Barber became quite interested in this sort of explanation and surveyed the literature in many fields, including vampire-related folklore, forensic science, embalming, and the methods used to dispose of corpses in a wide variety of cultures. He does an admirable job of research. His book should be a classic in explanations of folklore for some time.

Much as I admire Barber's work, this book is most certainly not for everyone. Considerable space is devoted to describing the behavior of corpses in a detailed and scientific manner, and it can at times be quite gruesome. Still, the emphasis on detail is valuable, and Barber's book provides a fascinating piece of investigative research into traditional supernatural beliefs and their explanations.

Peter Huston is a teacher and writer who currently lives in Taiwan.

Recent Books



Au Coeur de l'Extra-Ordinaire. Henri Broch. l'Horizon Chimerique, 7-8 Rue Leyteire, 33000 Bordeaux, France, 1991. 386 pp. 120F, paper. Comprehensive popular book, by French biophysicist and CSICOP Fellow, provides critical examinations of virtually every class of pseudoscientific or fringe-science claims. In French. With witty line illustrations by Paul Lebrun.

Beyond the Body. Susan J. Blackmore. Academy Chicago Publishers, 213 West Institute Place, Chicago, IL 60610, 1992. 284 pp. $13.00, paper. Welcome paperback edition of Blackmore's 1984 book investigating the out-of-body experience. A new postscript by the author summarizes what has happened since, including tests of many of the hypotheses. Readers of Blackmore's recent writings in *SI* will be familiar with her naturalistic explanations of the OBE phenomenon: the famous "tunnel effect" can be accounted for in physiological terms, and other OBE phenomena can be explained as the effect of a struggling brain attempting to build a model of reality with no outside input and therefore calling upon memory and imagination.

Hidden Memories: Voices and Visions from Within. Robert A. Baker. Prometheus Books, 700 E. Amherst Street, Buffalo, NY 14215, 1992. 373 pp. $27.95, cloth. An important examination by a psychologist of the hallucinatory or delusionary experience and anomalies of memory, including their many manifestations that lead to sincere belief in alien abductions, satanic kidnappings, spirit-channeling, recall of past lives, and so on. Such anomalous or "supernatural" experiences are manifestations of cryptomnesia, or hidden memories, Baker suggests. This is a phenomenon in which experiences that initially made little impression are filed away in the brain and later suddenly recalled in altered form. Baker also explores what should and should not be defined as mental disease, how delusions and illusions affect behavior, and the way the media have contributed to the growth and spread of urban legends and other modern folklore.

On the Wild Side. Martin Gardner. Prometheus Books, 700 E. Amherst Street, Buffalo, NY 14215, 1992. 257 pp. $24.95, cloth. The latest collection of Gardner's essays from the SKEPTICAL INQUIRER (the first half of the book) and essays and reviews in the *New York Review of Books* and other publications. Critical examinations of dozens of fringe claims and their proponents: the "nutshell' earth, creationism, relativism, astrology, speaking in tongues, ESP, PK, Wilhelm Reich, Colin Wilson, Aleister Crowley, Oral Roberts, Robert Gentry, Ira Einhorn, Frank Tipler, and John Beloff.

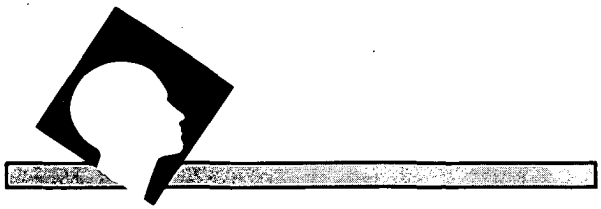
Psychology. Second Edition. Douglas A. Bernstein, Edward J. Roy, Thomas K. Srull, and Christopher D. Wickens. Houghton Mifflin Company, 1992, 830 pp. New introductory textbook is, according to the authors, explicitly

designed to draw students' attention to the importance of critical thinking and to give them rules for, and practice at, approaching phenomena from a scientific point of view. Each chapter, for example, contains a "thinking critically" section that helps students evaluate assertions using a five-step system: What am I asked to believe? What is the evidence? Are alternative explanations available? What additional evidence would be useful in evaluating alternatives? What conclusions are most reasonable?

The Great American Medicine Show: Being an Illustrated History of Hucksters, Healers, Health Evangelists, and Heroes from Plymouth Rock to the Present. David Armstrong and Elizabeth Metzger Armstrong. Prentice Hall, 1991. 292 pp. $17.95, paper. Generously illustrated exploration into the "grand parade of the colorful, idiosyncratic, and sometimes visionary leaders of a wide array of American health reform movements." Dozens of health trends, beliefs, and cures are here, and their "often wild, wacky, and amusing claims": homeopathy, vegetarianism, phrenology, hydropathy, mineral water, chiropractice, patent medicines, electrical cures, divine healing, Hollywood, organic America (Rodale & Co.), dieting crazes. Includes a final chapter on "Fitness: The Ultimate Cure."

—*Kendrick Frazier*

Articles of Note



DiBattista, D., and M. L. Shepherd. "Teachers' Beliefs Regarding Sugar Consumption and Hyperactivity in Children." Paper presented at the Annual Meeting of the Eastern Psychological Association, Boston, Massachusetts, April 1992. Although the available body of scientific evidence does not support the notion that sugar has adverse effects on the behavior of hyperactive children, a mailed questionnaire revealed that more than 85 percent of 389 Canadian primary-school teachers believe that it does. Fifty-five percent of them had counseled parents of hyperactive children to reduce their children's sugar consumption to control their activity levels.

French, Christopher C. "Population Stereotypes and Belief in the Paranormal: Is There a Relationship?" *Australian Psychologist*, vol. 27, 1992, pp. 57-58. Tell people to choose a number between 1 and 10. By far the most popular response will be "7." This is an example of a population stereotype. Stage psychics exploit such effects in their acts. This study of 58 subjects demonstrates a number of other population stereotypes in a study ostensibly investigating telepathy. People show a strong tendency to choose certain predictable responses: two simple drawings? (house and circle the most popular); two-digit number? (37% of responses gave 21, 22, or 23, with 23 the most popular);

two geometric forms, one inside the other? (30% gave a circle in a triangle, 26% a circle in a square). No correlation was found, however, between the tendency to choose stereotypical responses and scores on the Belief in the Paranormal scale.

Gould, Stephen Jay. "The Most Unkindest Cut of All." *Natural History,* May 1992, pp. 2-11. Painful essay on Adolf Eichmann's January 1942 Wannsee Protocol, which summarized the Nazi plan for what was euphemistically called the "final solution to the Jewish question"—the systematic murder of millions of Jews. The rarely discussed second half of the Protocol uses as its rationale against racial mixing and for genocide the concept of *natural selection.* This, cries Gould, is "the absolute ultimate in all conceivable misappropriation [of the theory of natural selection]. To think that the key phrase of my professional world lies so perversely violated in the very heart of the chief paragraph in the most evil document ever written! What symbol of misuse could possibly be more powerful?" Calls upon scientists to be vigilant in combatting misuses of scientific concepts, and humble in pointing out that moral questions have to be answered from outside science—although scientists can and should speak out strongly on moral issues as human beings.

James, Mary, and Kate Loewenthal. "Handwriting Stereotypes for the Judgement of Depression." *The Journal of Social Psychology,* 131 (5): 749-750, 1991. Study concludes that lay judgments of depression based on handwriting are reliable, but that is because the handwriting of depressed persons is untidy not because of any more esoteric graphological analyses.

Merskey, H. "The Manufacture of Personalities: The Production of Multiple Personality Disorder." *British Journal of Psychiatry,* 160: 327-340, 1992. Unprecedented numbers of cases of MPD have been diagnosed, mainly in North America, since 1957. Widespread publicity for the concept makes it uncertain whether any such case can now arise without having been promoted by suggestion or prior preparation. To determine if there is any evidence that MPD was ever a spontaneous phenomenon, the author, a psychiatrist, examined a series of cases of MPD from the earlier literature. Finds that no report fully excluded the possibility of artificial production. "The diagnosis of MPD represents a misdirection of effort which hinders the resolution of serious psychological problems in the lives of patients," says Merskey.

Moore, Randy. "Debunking the Paranormal: We Should Teach Critical Thinking as a Necessity for Living, Not Just As a Tool for Science." *American Biology Teacher,* January 1992, pp. 4-9. Lengthy, comprehensive article by the magazine's editor begins as editorial calling for teaching biology students to synthesize information and think critically—not just in class but outside of school as well. Laments the popularity of astrology "and similar pseudoscientific shams," which attest to lack of critical thinking, and says, "Science remains the most successful way of understanding the world." Then describes in some detail 15 kinds of "fantasies popular among people who cannot or will not think critically," including astrology, New Age claims, numerology, creationism, prophecy, L. Ron Hubbard's wild claims, psychics and ESP, and "surprise appearances and wild doings by religious celebrities" (crying statues of Mary, etc.). "I'm not

suggesting that we turn our biology courses into discussions of the paranormal or occult. . . . However, we have many opportunities—often informal and outside of class—to urge students to think critically."

Morgan. J. P., N. R. Chaganty, R. C. Dahiya, and M. J. Doviak. "Let's Make a Deal: The Player's Dilemma." *American Statistician*, November 1991, pp. 284-289, 347-348. Another examination of the three-door problem as presented and debated recently in *Parade* magazine. "The solution and failed attempts at solution are rich in their lessons in thinking about conditional probability."

Paskal, Cleo. "Space Aliens Made Me Cynical! The View From Tabloid Valley." *Columbia Journalism Review*, May/June 1992, pp. 18-19. Brief once-over look at recent headlines and stories in the six largest supermarket tabloids. Quotes Eddie Clontz, editor, *Weekly World News:* "Everybody else is trying to demystify everything. We're trying to do the opposite, to mystify them. We're in a constant struggle against medicine, science, and religion." No analysis here, but ends with a telling quote: "Everything is becoming more tabloid."

Randi, James. "Help Stamp Out Absurd Beliefs." *Time*, April 13, 1992, p. 80. Strongly worded guest essay by the indefatigable magician and debunker of psychic pretensions: "Everywhere we look we find anti-scientific bias and belief in the unbelievable. . . . 'Police psychics' have been investigated scientifically and found to be of absolutely no use; in fact, they impede investigations. . . . Currently, German science is agog with its exciting discovery of 'E rays,' which are said to come from deep within the earth and cause cancer and which cannot be detected by any known scientific instrument. . . . Washington spoon-bending parties are regularly attended by top brass from the Pentagon. . . . Acceptance of nonsense as a harmless aberration can be dangerous to us. . . . [It can] cripple our perception of the world around us. We must reach for the truth, not for the ghosts of dead absurdities."

—*Kendrick Frazier*

A REMINDER . . .

All *subscription* correspondence (new subscriptions, renewals, back-issue orders, billing problems) should be addressed to:

SKEPTICAL INQUIRER, Box 703, Buffalo, NY 14226-0703

All *editorial* correspondence (manuscripts, letters to the editor, books for review, authors' queries) should be addressed to the Editor's office in Albuquerque:

Kendrick Frazier, Editor, SKEPTICAL INQUIRER, 3025 Palo Alto Dr. N.E., Albuquerque, NM 87111

Inquiries concerning CSICOP programs or policies should be addressed to:

Paul Kurtz, Chairman, CSICOP, Box 703, Buffalo, NY 14226-0703

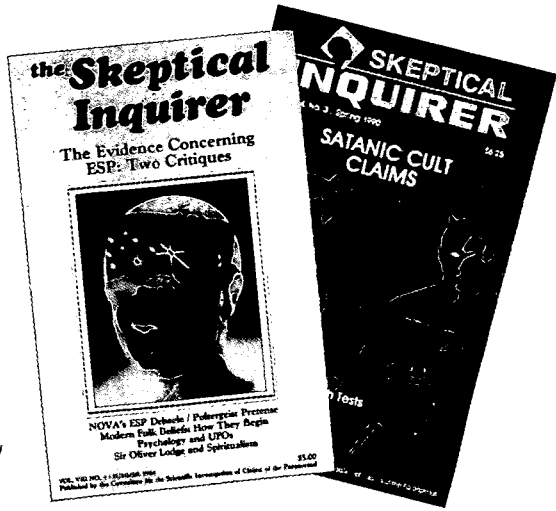
Fill in the gaps in your

SKEPTICAL INQUIRER

collection

15% discount on orders of $100 or more

($6.25 for each copy. To order, use reply card insert.)


the Skeptical Inquirer
The Evidence Concerning ESP: Two Critiques
NOVA's ESP Debacle / Poltergeist Presence
Modern Folk Beliefs How They Begin
Psychology and UFOs
Sir Oliver Lodge and Spiritualism
SKEPTICAL INQUIRER
SATANIC CULT CLAIMS

SUMMER 1992 (vol. 16, no. 4): Freedom of scientific inquiry under siege, *Kurtz*. Psychic experiences: Psychic illusions, *Blackmore*. The scientist's skepticism, *Bunge*. The persistent popularity of the paranormal, *Lett*. Self-help books: Pseudoscience in the guise of science? *Gambrill*. Ghost lights in Texas, *Lindee*. Big bang theory still lives, *Gardner*.

SPRING 1992 (vol. 16, no. 3): Special Report: The Maharishi caper: *JAMA* hoodwinked, *Skolnick*. Myths of subliminal persuasion: The cargo-cult science of subliminal persuasion, *Pratkanis;* Subliminal perception: Facts and fallacies, *Moore;* Subliminal tapes, *Phelps and Exum*. The Avro VZ-9 'flying saucer,' *Blake*. Two 19th-century skeptics: Augustus de Morgan and John Fiske, *Rothman*. The sad story of Professor Haldane, *Martin Gardner*.

WINTER 1992 (vol. 16, no. 2): On being sued: The chilliing of freedom of expression, *Kurtz*. The crop-circle phenomenon, *Nickell and Fischer*. Update on the 'Mars effect,' *Ertel*. A dissenting note on Ertel's 'Update,' *Kurtz*. Magic Melanin: Spreading scientific illiteracy among minorities, Part 2, *de Montellano*. Adventures in science and cyclosophy, *de Jager*. Searching for security in the mystical, *Grimmer*. Probability paradoxes, *Gardner*.

FALL 1991 (vol. 16, no. 1): Near-death experiences, *Blackmore*. Multicultural pseudoscience: Spreading scientific illiteracy, Part 1, *de Montellano*. Science and commonsense skepticism, *Aach*. Spook Hill, *Wilder*. Lucian and Alexander, *Rowe*. 1991 CSICOP conference, *Shore* and *Frazier*. Reeder feedback from Urantia to Titanic, *Gardner*.

SUMMER 1991 (vol. 15, no. 4): Lucid dreams, *Blackmore*. Nature faking in the humanities, *Gallo*. Carrying the war into the never-never land of psi: Part 2, *Gill*. Coincidences, *Paulos*. Locating invisible buildings, *Plummer*. True believers, *Bower*. Cal Thomas, the big bang, and Forrest Mims, *Gardner*.

SPRING 1991 (vol. 15, no. 3): Special report: Hi-fi pseudoscience, *Davis*. Searching for extraterrestrial intelligence: An interview with *Thomas R. McDonough*. Getting smart about getting smarts, *Faulkes*. Carrying the war into the never-never land of psi: Part 1, *Gill*. Satanic cult 'survivor' stories, *Victor*. 'Old-solved mysteries': The Kecksburg incident, *Young*. Penn & Teller, the magical iconoclasts, *Gordon*. Magic, medicine, and metaphysics in Nigeria, *Roder*. What's wrong with science education? Look at the family, *Eve*. Three curious research projects, *Gardner*.

WINTER 1991 (vol. 15, no. 2): Special report / Gallup poll: Belief in paranormal phenomena, *Gallup and Newport*. Science and self-government, *Piel*. West Bank collective hysteria episode, *Stewart*. Acceptance of personality test results, *Thiriart*. Belief in astrology: A test of the Barnum effect, *French, Fowler, McCarthy, and Peers*. A test of clairvoyance using signal-detection, *McKelvie and Gagné*. Intercessory prayer as medical treatment? *Wittmer and Zimmerman*. Tipler's Omega Point theory, *Martin Gardner*.

FALL 1990 (vol. 15, no. 1): Neural Organization Technique: Treatment or torture, *Worrall*. The spooks of quantum mechanics, *Stenger*. Science and Sir William Crookes, *Hoffmaster*. The 'N' machine, *Cumming*. Biological cycles and rhythms vs. biorhythms, *Wheeler*. The mysterious finger-lift levitation, Gardner. 1990 CSICOP Conference.

SUMMER 1990 (vol. 14, no. 4): Ghosts make news: How four newspapers report psychic phenomena, *Klare*. Thinking critically and creatively, *Wade and Tavris*. Police pursuit of satanic crime, Part 2, *Hicks*. Order out of chaos in survival research, *Berger*. Piltdown, paradigms, and the paranormal, *Feder*. Auras: Searching for the light, *Loftin*. Biorhythms and the timing of death, *Lester*. Relativism in science, *Gardner*.

SPRING 1990 (vol. 14, no. 3): Why we need to understand science, *Sagan*. The crisis in pre-college science and math education, *Seaborg*. Police pursuit of satanic crime, Part 1, *Hicks*. The spread of satanic-cult rumors, *Victor*. Lying about polygraph tests, *Shneour*. Worldwide disasters and moon phase, *Kelly, Saklofske, and Culver*. St. George and the dragon of creationism, *Gardner*.

WINTER 1990 (vol. 14, no. 2): The new catastrophism, *Morrison and Chapman*. A field guide to critical thinking, *Lett*. Cold fusion: A case history in 'wishful science'? *Rothman*. The airship hysteria of 1896-97, *Bartholomew*. Newspaper editors and the creation-evolution controversy, *Zimmerman*. Special report: New evidence of MJ-12 hoax, *Klass*. The great Urantia mystery, *Gardner*.

FALL 1989 (vol. 14, no. 1): Myths about science, *Rothman*. The relativity of wrong, *Asimov*. Richard Feynman on fringe science. Luis Alvarez and the explorer's quest, *Muller*. The two cultures, *Jones*. The 'top-secret UFO papers' NSA *won't* release, *Klass*. The metaphysics of Murphy's Law, *Price*. The Unicorn at large, Gardner.

SUMMER 1989 (vol. 13, no. 4): The New Age—An Examination: The New Age in perspective, *Kurtz*. A New Age reflection in the magic mirror of science, *O'Hara*. The New Age: The need for myth in an age of science, *Schultz*. Channeling, *Alcock*. The psychology of channeling, *Reed*, 'Entities' in the linguistic minefield, *Thomason*. Crystals, *Lawrence*. Consumer culture and the New Age,

(continued on next page)

Rosen. The Shirley MacLaine phenomenon, *Gordon.* Special report: California court jails psychic surgeon, *Brenneman.*

SPRING 1989 (vol. 13, no. 3): High school biology teachers and pseudoscientific belief, *Eve and Dunn.* Evidence for Bigfoot? *Dennett.* Alleged pore structure in Sasquatch footprints, *Freeland and Rowe.* The lore of levitation, *Stein.* Levitation 'miracles' in India, *Premanand.* Science, pseudoscience, and the cloth of Turin, *Nickell.* Rather than just debunking, encourage people to think, *Seckel.* MJ-12 papers 'authenticated'? *Klass.* A patently false patent myth, *Sass.*

WINTER 1989 (vol. 13, no. 2): Special report: The 'remembering water' controversy, *Gardner and Randi;* Bibliographic guide to the 'dilution controversy.' Pathologies of science, precognition, and modern psychophysics, *Jensen.* A reaction-time test of ESP and precognition, *Hines and Dennison.* Chinese psychic's pill-bottle demonstration, *Wu Xiaoping.* The Kirlian technique, *Watkins and Bickel.* Certainty and proof in creationist thought, *Leferrière.*

FALL 1988 (vol. 13, no. 1): Special report: Astrology and the presidency, *Kurtz and Bob.* Improving Human Performance: What about parapsychology? *Frazier.* The China syndrome: Further reflections on the paranormal in China, *Kurtz.* Backward masking, *McIver.* The validity of graphological analysis, *Furnham.* The intellectual revolt against science, *Grove.* Reich the rainmaker, *Gardner.*

SUMMER 1988 (vol. 12, no. 4): Testing psi claims in China, *Kurtz, Alcock, Frazier, Karr, Klass, and Randi.* The appeal of the occult: Some thoughts on history, religion, and science, *Stevens.* Hypnosis and reincarnation, *Venn.* Pitfalls of perception, *Wheeler.* Wegener and pseudoscience: Some misconceptions, *Edelman.* An investigation of psychic crime-busting, *Emery.* High-flying health quackery, *Hines.* The bar-code beast, *Keith.* Occam's Razor and the nutshell earth, *Gardner.*

SPRING 1988 (vol. 12, no. 3): Neuropathology and the legacy of spiritual possession, *Beyerstein.* Varieties of alien experience, *Ellis.* Alien-abduction claims and standards of inquiry (excerpts from Milton Rosenberg's radio talk-show with guests Charles Gruder, Martin Orne, and Budd Hopkins). The MJ-12 Papers: Part 2, *Klass.* Doomsday: The May 2000 prediction, *Meeus.* My visit to the Nevada Clinic, *Barrett.* Morphic resonance in silicon chips, *Varela and Letelier.* Abigail's anomalous apparition, *Durm.* The riddle of the Colorado ghost lights, *Bunch and White.* The obligation to disclose fraud, *Gardner.*

WINTER 1987-88 (vol. 12, no. 2): The MJ-12 papers: Part I, *Philip J. Klass.* The aliens among us: Hypnotic regression revisited, *Baker.* The brain and consciousness: Implications for psi, *Beyerstein.* Past-life hypnotic regression, *Spanos.* Fantasizing under hypnosis, *Reveen.* The verdict on creationism, *Gould.* Irving Kristol and the facts of life, *Gardner.*

FALL 1987 (vol. 12, no. 1): The burden of skepticism, *Sagan.* Is there intelligent life on Earth? *Kurtz.* Medical Controversies: Chiropractic, *Jarvis;* Homeopathy, *Barrett, M.D.;* Alternative therapies, *Jones;* Quackery, *Pepper.* Catching Geller in the act, *Emery.* The third eye, *Gardner.* Special Report: CSICOP's 1987 conference.

SUMMER 1987 (vol. 11, no. 4): Incredible cremations: Investigating combustion deaths, *Nickell and Fischer.* Subliminal deception, *Creed.* Past tongues remembered? *Thomason.* Is the universe improbable? *Shotwell.* Psychics, computers, and psychic computers, *Easton.* Pseudoscience and children's fantasies, *Evans.* Thoughts on science and superstrings, *Gardner.* Special Reports: JAL pilot's UFO report, *Klass;* Unmasking psychic Jason Michaels, *Busch.*

SPRING 1987 (vol. 11, no. 3): The elusive open mind: Ten years of negative research in parapsychology, *Blackmore.* Does astrology need to be true? Part 2: The answer is no, *Dean.* Magic, science, and metascience: Some notes on perception, *D. Sagan.* Velikovsky's interpretation of the evidence offered by China, *Lo.* Anomalies of Chip Arp, *Gardner.*

WINTER 1986-87 (vol. 11, no. 2): Case study of West Pittston 'haunted' house, *Kurtz.* Science, creationism and the Supreme Court, *Seckel,* with statements by *Ayala, Gould,* and *Gell-Mann.* The great East Coast UFO of August 1986, *Oberg.* Does astrology need to be true? Part 1, *Dean.* Homing abilities of bees, cats, and people, *Randi.* The EPR paradox and Rupert Sheldrake, *Gardner.* Followups: On fringe literature, *Bauer;* on Martin Gardner and Daniel Home, *Beloff.*

FALL 1986 (vol. 11, no. 1): The path ahead: Opportunities, challenges, and an expanded view, *Frazier.* Exposing the faith-healers, *Steiner.* Was Antarctica mapped by the ancients? *Jolly.* Folk remedies and human belief-systems, *Reuter.* Dentistry and pseudoscience, *Dodes.* Atmospheric electricity, ions, and pseudoscience, *Dolezalek.* Noah's ark and ancient astronauts, *Harrold and Eve.* The Woodbridge UFO incident, *Ridpath.* How to bust a ghost, *Baker.* The unorthodox conjectures of Tommy Gold, *Gardner.*

SUMMER 1986 (vol. 10, no. 4): Occam's razor, *Shneour.* Clever Hans redivivus, *Sebeok.* Parapsychology miracles, and repeatability, *Flew.* The Condon UFO study, *Klass.* Four decades of fringe literature, *Dutch.* Some remote-viewing recollections, *Weinberg.* Science, mysteries, and the quest for evidence, *Gardner.*

SPRING 1986 (vol. 10, no. 3): The perennial fringe, *Asimov.* The uses of credulity, *de Camp.* Night walkers and mystery mongers, *Sagan.* CSICOP after ten years, *Kurtz.* Crash of the crashed-saucers claim, *Klass.* A study of the Kirlian effect, *Watkins and Bickel.* Ancient tales and space-age myths of creationist evangelism, *McIver.* Creationism's debt to George McCready Price, *Gardner.*

WINTER 1985-86 (vol. 10, no. 2): The moon was full and nothing happened, *Kelly, Rotton, and Culver.* Psychic studies: The Soviet dilemma, *Ebon.* The psychopathology of fringe medicine, *Sabbagh.* Computers and rational thought, *Spangenburg and Moser.* Psi researchers' inattention to conjuring, *Gardner.*

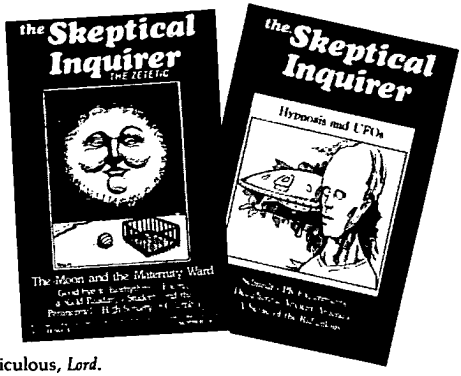
FALL 1985 (vol. 10, no. 1): Investigations of firewalking, *Leikind and McCarthy.* Firewalking: reality or illusion, *Dennett.* Myth of alpha consciousness, *Beyerstein.* Spirit-rapping unmasked, *V. Bullough.* The Saguaro incident, *Taylor and Dennett.* The great stone face, *Gardner.*

SUMMER 1985 (vol. 9, no. 4): Guardian astrology study, *Dean, Kelly, Rotton, and Saklofske.* Astrology and the commodity market, *Rotton.* The hundredth monkey phenomenon, *Amundson.* Responsibilities of the media, *Kurtz.* 'Lucy' out of context, *Albert.* The debunking club, *Gardner.*

SPRING 1985 (vol. 9, no. 3): Columbus poltergeist: I, *Randi.* Moon and murder in Cleveland, *Sanduleak.* Image of Guadalupe, *Nickell and Fischer.* Radar UFOs, *Klass.* Phrenology, *McCoy.* Deception by patients, *Pankratz.* Communication in nature, *Orstan.* Relevance of belief systems, *Gardner.*

WINTER 1984-85 (vol. 9, no. 2): The muddled 'Mind Race,' *Hyman.* Searches for the Loch Ness monster, *Razdan and Kielar.* Final interview with Milbourne Christopher, *Dennett.* Retest of astrologer John McCall, *Ianna and Tolbert.* 'Mind Race,' *Gardner.*

FALL 1984 (vol. 9, no. 1): Quantum theory and the paranormal, *Shore.* What is pseudoscience? *Bunge.* The new philosophy of science and the 'paranormal,' *Toulmin.* An eye-opening double encounter, *Martin.* Similarities between identical twins and between unrelated people,



Wyatt et al. Effectiveness of a reading program on paranormal belief, *Woods,* Pseudoscientific beliefs of 6th-graders, *A. S. and S. J. Adelman.* Koestler money down the psi-drain, *Gardner.*

SUMMER 1984 (vol. 8, no. 4): Parapsychology's past eight years, *Alcock.* The evidence for ESP, *C. E. M. Hansel.* $110,000 dowsing challenge, *Randi.* Sir Oliver Lodge and the spiritualists, *Hoffmaster.* Misperception, folk belief, and the occult, *Connor.* Psychology and UFOs, *Simón.* Freud and Fliess, *Gardner.*

SPRING 1984 (vol. 8, no. 3): Belief in the paranormal worldwide: Mexico, *Mendez-Acosta;* Netherlands, *Hoebens;* U.K., *Hutchinson;* Australia, *Smith;* Canada, *Gordon;* France, *Rouzé.* Debunking, neutrality, and skepticism in science, *Kurtz.* University course reduces paranormal belief, *Gray.* The Gribbin effect, *Roder.* Proving negatives, *Pasquarello.* MacLaine, McTaggart, and McPherson, *Gardner.*

WINTER 1983-84 (vol. 8, no. 2): Sense and nonsense in parapsychology, *Hoebens.* Magicians, scientists, and psychics, *Ganoe and Kirwan.* New dowsing experiment, *Martin.* The effect of TM on weather, *Trumpy.* The haunting of the Ivan Vassilli, *Sheaffer.* Venus and Velikovsky, *Forrest.* Magicians in the psi lab, *Gardner.*

FALL 1983 (vol. 8, no. 1): Creationist pseudoscience, *Schadewald.* Project Alpha: Part 2, *Randi.* Forecasting radio quality by the planets, *Dean.* Reduction in paranormal belief in college course, *Tobacyk.* Humanistic astrology, *Kelly and Krutzen.*

SUMMER 1983 (vol. 7, no. 4): Project Alpha: Part 1, *Randi.* Goodman's 'American Genesis,' *Feder.* Battling on the airwaves, *Slavsky.* Rhode Island UFO film, *Emery.* Landmark PK hoax, *Gardner.*

SPRING 1983 (vol. 7, no. 3): Iridology, *Worrall.* The Nazca drawings revisited, *Nickell. People's Almanac* predictions, *Donnelly.* Test of numerology, *Dlhopolsky.* Pseudoscience in the name of the university, *Lederer and Singer.*

WINTER 1982-83 (vol. 7, no. 2): Palmistry, *Park.* The great SRI die mystery, *Gardner.* The 'monster' tree-trunk of Loch Ness, *Campbell.* UFOs and the not-so-friendly skies, *Klass.* In defense of skepticism, *Reber.*

FALL 1982 (vol. 7, no. 1): The prophecies of Nostradamus, *Cazeau.* Prophet of all seasons, *James Randi.* Revival of Nostradamitis, *Hoebens.* Unsolved mysteries and extraordinary phenomena, *Gill.* Clearing the air about psi, *Randi.* A skotography scam, *Randi.*

SUMMER 1982 (vol. 6, no. 4): Remote-viewing, *Marks.* Radio disturbances and planetary positions, *Meeus.* Divining in Australia, *Smith.* "Great Lakes Triangle," *Cena.* Skepticism, closed-mindedness, and science fiction, *Beyerstein.* Followup on ESP logic, *Hardin and Morris* and *Gendin.*

SPRING 1982 (vol. 6, no. 3): The Shroud of Turin, *Mueller.* Shroud image, *McCrone.* Science, the public, and the Shroud, *Schafersman.* Zodiac and personality, *Gauquelin.* Followup on quantum PK, *Hansel.*

WINTER 1981-82 (vol. 6, no. 2): On coincidences, *Ruma Falk.* Croiset: Part 2, *Hoebens.* Scientific creationism, *Schadewald.* Follow-up on 'Mars effect,' *Rawlins,* responses by *CSICOP Council* and *Abell and Kurtz.*

FALL 1981 (vol. 6, no. 1): Gerard Croiset: Part 1, *Hoebens.* Test of perceived horoscope accuracy, *Lackey.* Planetary positions and radio propagation, *Ianna and Margolin.* Bermuda Triangle, 1981, *Dennett.* Observation of a psychic, *McIntyre.*

SUMMER 1981 (vol. 5, no. 4): Investigation of 'psychics, *Randi.* ESP: A conceptual analysis, *Gendin.* The extroversion-introversion astrological effect, *Kelly and Saklofske.* Art, science, and paranormalism, *Habercom.* Profitable nightmare, *Wells.* A Maltese cross in the Aegean? *Loftin.*

SPRING 1981 (vol. 5, no. 3): Hypnosis and UFO abductions, *Klass.* Hypnosis not a truth serum, *Hilgard.* H. Schmidt's PK experiments, *Hansel.* Further comments on Schmidt's experiments, *Hyman.* Atlantean road, *Randi.* Deciphering ancient America, *McKusick.* A sense of the ridiculous, *Lord.*

WINTER 1980-81 (vol. 5, no. 2): Fooling some people all the time, *Singer and Benassi.* Recent perpetual motion developments, *Schadewald.* National Enquirer astrology study, *Mechler, McDaniel, and Mulloy.* Science and the mountain peak, *Asimov.*

FALL 1980 (vol. 5, no. 1): The Velikovsky affair — articles by *Oberg, Bauer, Frazier.* Academia and the occult, *Greenwell.* Belief in ESP among psychologists, *Padgett, Benassi, and Singer.* Bigfoot on the loose, *Kurtz.* Parental expectations of miracles, *Steiner.* Downfall of a would-be psychic, *McBurney and Greenberg.* Parapsychology research, *Mishlove.*

SUMMER 1980 (vol. 4, no. 4): Superstitions, *Bainbridge and Stark.* Psychic archaeology, *Feder.* Voice stress analysis, *Klass.* Follow-up on the 'Mars effect,' Evolution vs. creationism, and the Cottrell tests.

SPRING 1980 (vol. 4, no. 3): Belief in ESP, *Morris.* UFO hoax, *Simpson.* Don Juan vs. Piltdown man, *de Mille.* Tiptoeing beyond Darwin, *Greenwell.* Conjurors and the psi scene, *Randi.* Follow-up on the Cottrell tests.

WINTER 1979-80 (vol. 4, no. 2): The 'Mars effect' — articles *by Kurtz, Zelen, and Abell; Rawlins; Michel and Françoise Gauquelin.* How I was debunked, *Hoebens.* The metal bending of Professor Taylor, *Gardner.* Science, intuition, and ESP, *Bauslaugh.*

FALL 1979 (vol. 4, no. 1): A test of dowsing, *Randi.* Science and evolution, *Godfrey.* Television pseudodocumentaries, *Bainbridge.* New disciples of the paranormal, *Kurtz.* UFO or UAA, *Standen.* The lost panda, *van Kampen.* Edgar Cayce, *Randi.*

SUMMER 1979 (vol. 3, no. 4): The moon and the birthrate, *Abell and Greenspan.* Biorhythms, *Hines.* 'Cold reading,' *Randi.* Teacher, student, and the paranormal, *Kral.* Encounter with a sorcerer, *Sack.*

SPRING 1979 (vol. 3, no. 3): Near-death experiences, *Alcock.* Television tests of Musuaki Kiyota, *Scott and Hutchinson.* The conversion of J. Allen Hynek, *Klass.* Asimov's corollary, *Asimov.*

WINTER 1978-79 (vol. 3, no. 2): Is parapsychology a science? *Kurtz.* Chariots of the gullible, *Bainbridge.* The Tunguska event, *Oberg.* Space travel in Bronze Age China, *Keightley.*

FALL 1978 (vol. 3, no. 1): An empirical test of astrology, *Bastedo.* Astronauts and UFOs, *Oberg.* Sleight of tongue, *Schwartz.* The Sirius "mystery," *Ridpath.*

SPRING/SUMMER 1978 (vol. 2, no. 2): Tests of three psychics, *Randi.* Biorhythms, *Bainbridge.* Plant perception, *Kmetz.* Anthropology beyond the fringe, *Cole.* NASA and UFOs, *Klass.* A second Einstein ESP letter, *Gardner.*

FALL/WINTER 1977 (vol. 2, no. 1): Von Däniken, *Story,* The Bermuda Triangle, *Kusche.* Pseudoscience at Science Digest, *Oberg and Sheaffer.* Einstein and ESP, *Gardner.* N-rays and UFOs, *Klass.* Secrets of the psychics, *Rawlins.*

SPRING/SUMMER 1977 (vol. 1, no. 2): Uri Geller, *Marks and Kammann.* Cold reading, *Hyman.* Transcendental Meditation, *Woodrum.* A statistical test of astrology, *McGervey.* Cattle mutilations, *Stewart.*

FALL/WINTER 1976 (vol. 1, no. 1): Dianetics, *Wallis.* Psychics and clairvoyance, *Fine.* "Objections to Astrology," *Westrum.* Astronomers and astrophysicists as astrology critics, *Kurtz and Nisbet.* Biorhythms and sports, *Fix.* Von Däniken's chariots, *Omohundro.*

Follow-up

New-Old Insight into the "Bloody Miracle" of San Gennaro

HENRI BROCH

This note concerns the scientific correspondence recently published in *Nature* (353:507, 1991) titled "Working Bloody Miracles," by Luigi Garlaschelli et al., in which the authors propose that thixotropy may furnish an explanation of the miracle of the liquefying blood of San Gennaro (Saint Januarius) in Naples, Italy, and present it as a new insight into the understanding of this miracle. The SKEPTICAL INQUIRER recently summarized this report (Spring 1992, p. 236).

Since the *Nature* authors say, "Our replication of the phenomenon seems to render this sacrifice [the opening of the miraculous vial] unnecessary," it seems to me appropriate to bring some information to your readers' attention. Essentially, this sacrifice has been rendered unnecessary by *previous* explanations of the miracle, explanations that are more fruitful than the thixotropic theory, which is *not* convenient for this miracle and, moreover, *not* a new theory.

- The authors say, "We propose that thixotropy may furnish an explanation . . ."

In fact, this sort of explanation was proposed by various persons. Perhaps the first was Professor Albini (University of Naples), in a paper titled "Sulla immobilita dei liquidi vischiosi non omogenei,"[1] published in 1890!

At this time, Albini had done the "San Gennaro blood experiment" with powdered chocolate, water, sugar, casein, lactoserum, and cooking salt and had shown that substances like this one could be liquefied under the influence of movement.[2]

- The authors say, "We propose that thixotropy may furnish an explanation . . ."

Sorry, but thixotropy failed to explain the attested cases in which the "blood" had been liquefied *without* any stress applied to the vial, failed to explain the attested cases in which the "blood" had *not* been liquefied even when the vial was manipulated and shocked, failed to explain the attested cases in which the "blood" *resolidified* while the vial was not left to stand (the procession was *not* ended!), and failed to explain the attested *various aspects* of the miracle, "duro," "glo-

betto" (small, hard core floating on the liquefied part), or the forming of bubbles giving a characteristic moss.

"Working Bloody Miracles" also contains some mistakes.

A small inexactitude is the statement that a vial of the blood of Saint Januarius "has been liquefied every few months since 1389 in Naples." In fact, since 1659 a secular deputation is supposed to take part in the observation of this miracle, and minutes are reported since that time; a chronicle should exist from 1340 to 1393, but this, although possible, seems not very reliable

Some mistakes are more serious.

To quote two basic sentences from the *Nature* report:

- "The phenomenon seems genuine, is well documented, and is still regarded as unexplained."

Untrue! The "still regarded as unexplained" shows a lack of information on the part of the authors and is really funny, since an explanation can be found, for example, in *Larousse's Dictionary of the 19th Century!*

Some years ago, I reconstituted a "miraculous" vial, reproducing *all* aspects of the miracle of Naples, according to the recipe of Pierre Larousse (briefly, "sulfuric ether reddened with plant Alkanna Tinctoria and the obtained dye saturated with spermaceti"[3] and this reconstitution has been "well publicized" by reporters.[4,5] For details on the story, the Larousse's mixture and mine, and other things, see references 6-8 and especially reference 7.

The phase transitions of this new portable miracle are simply the consequence of temperature variations.

- "Thus a successful performance of the rite *does not involve any conscious cheating.*"

Untrue! History substantiates the contrary. I quote myself: "The clergy of Naples has frequently used the alleged miracle of Saint Januarius for the benefit of political passions. When Championnet, leading a French army, took possesion of Naples in 1799, he learned that, to incite the public against him, the miracle of Saint Januarius would not take place. On the precise day the blood was to be exhibited, he went to the cathedral; the blood had not liquefied, and the people were beginning to get agitated. Then the republican general said to one of his aides-de-camp: 'Go to the priest who is officiating and tell him that if the blood is not boiling within five minutes I will have Naples bombarded.' Within five minutes the miracle had taken place."[7]

To complete the information and prove the two fundamental sentences in the "*Nature* report" incorrect, I relate a single testimony (I have already reported this elsewhere).[8,9] This testimony is dated October 1921:

"When last year I had the privilege above mentioned of discussing biblical miracles in this journal, I made allusion to the spasmodically liquefying blood of St. Januarius. This has elicited from my medical friend, Frederic Newton Williams, L.S.A., L.R.C.P., a well-known fellow of the Linnean Society, the following record of a personal experience that, in my humble opinion, deserves the widest possible recognition. He says:

> When at Naples several years ago, I visited the municipal hospital and called at the hospital dispensary to have a talk with the American pharmacist who superintended the department. While there, a young acolyte from the Cathedral di San Gennaio (St. Januarius) came in and asked the pharmacist for the usual mixture for use at the feast, which was to take place the next day (the

first Saturday in May). With a smile and a few words of banter, the pharmacist prepared a mixture of ox-bile and crystals of Glauber's salt (sulphate of soda), and, keeping the written message, handed it to the messenger to take back to the cathedral sacristy. After thus dismissing the acolyte, the practical pharmacist simply remarked to me that miracles took place nowadays, and this one was prepared in a hospital pharmacy with very satisfactory results. The next morning the pharmacist and I sat in a café and watched the solemn procession of the liquefied blood from the church Santa Chiara on its way to the cathedral. Thanks to my genial companion, the "miracle" was quite successful. He also explained that at the second celebration, which takes place on 16th December in the cathedral only (without a procession), the liquefaction is slower on account of the cooler weather.

"It seems that in all ages, while credulity keeps its mouth open, there will ever be miracle-mongers keen to gratify that appetite."[10]

Without comment.

Notes

1. G. Albini, *C. R. Accad. Sc. Fis. e Mat.*, 2, January 1, 1890.
2. C. Piancastelli, *Revue Métapsychique*, 3:31–63, 1966.
3. P. Larousse, article on Saint Januarius in his *Universal Dictionary*, 19th century (quoted at length in references 6 and 7, pp. 103-104), no date.
4. P. Jerome, *Révolution*, 284:22–23, 1985.
5. S. Benedetti, *Nice-Matin*, September 20, 1988, p. 3.
6. H. Broch, *Patriote-Côte d'Azur*, 732:2, 1981.
7. H. Broch, *Le Paranormal* (Paris: Seuil, 1985).
8. H. Broch, *International videotex Minitel service 36.15 ZET* (University of Nice-Sophia Antipolis, 1986 and sq.).
9. H. Broch, *Au Coeur de l'Extra-Ordinaire* (Bordeaux: Horizon Chimérique, 1991).
10. T. R. R. Stebbing, *Hibbert Journal*, 21:156, 1921.

Henri Broch, Biophysics Laboratory, University of Nice–Sophia Antipolis, Parc Valrose, 06108 Nice cedex 2, France.

On the Origins of Atomic Arithmetic

WALTER R. HEARN

In "Cold Fusion Chicken" (News and Comment, Winter 1992), Bill Malcolm and Phil Garnock-Jones responded to some bizarre ideas of "a 'French scientist' named Kervan," found in a 1990 New Zealand farming magazine.

The "French scientist" cited must be none other than Louis C. Kervran (note spelling), author of *Biological Transmutations* (1972), a book I reviewed skeptically 20 years ago. The English version, translated from the French by Michel Abehsera, was published by Swan House Publishing Co. of Binghamton, New York. Abehsera wrote in the Foreword that he had put all of Kervran's books into one.

According to the translator, Kervran started publishing his discoveries in 1959, encountering "violent oppo-

sition from skeptical people who were reluctant to accept something new." In July 1960 "a French scientific review published an article on Louis Kervran," and in 1962 *Biological Transmutations* was published by Labrarie Maloine. It went through three editions, followed by *Transmutations Naturelles* (1963), *Transmutations à Faible Energie* 1964), *Preuves Relatives à l'Existense des Transmutations Biologiques* (1968), and *Transmutations Biologiques en Agronomie.*

The English version resembled an authentic technical treatise bearing a few tables, graphs, and chemical formulas. Yet the cover promised "a new science" within, proclaiming (with exclamation point) that "the movement of life proceeds from the constant changing of one element into another!" At first glance a reader with some knowledge of chemistry could have assumed that the word *element* was simply being used in other than its chemical sense, and might blame poor translation for various other strange features. Within a few pages, though, it was inescapable that the author was making the kinds of outlandish claims that caught the attention of Malcolm and Garnock-Jones. Kervran was playing arithmetical games with atomic numbers, as in the examples cited in *SI.*

On the title page, Louis Kervran was identified merely as an "active member of the New York Academy of Sciences," a hint that the author might be short on other scientific credentials. What positions had he held? The text occasionally dropped a hint: "As a high official of the French government, I had the unique privilege of using any official laboratory." He wrote that, in 1935, "my job was to investigate the conditions" surrounding an accident in which an oxyacetylene welder died from carbon-monoxide poisoning. In 1955 three welders died, and Kervran "received all the detailed reports, including autopsies." That year he "saw the light," jumping to an astonishing conclusion to explain the "puzzling observations." From questionable, incomplete evidence, Kervran extrapolated to a whole new science in which chemical elements are transmuted by the exchange of nuclear particles, primarily in metabolic reactions.

Kervran reasoned that if a nuclear proton in one atom of the diatomic nitrogen molecule could switch to the other nucleus in the molecule, the N atom (atomic no. 7) losing the proton would become a C atom (at. no. 6) and the one gaining it would become an O atom (at. no. 8). He concluded that at the surface of the hot metal some N-N molecules must have become C-O, inhaled by the welders. Ever since his boyhood days in Brittany, he wrote, he had wondered where chickens got enough calcium to produce eggshells, and now he suddenly realized that one could get to the Ca atomic number of 20 by a combination of Si (14) plus C (6), or from K (19) plus H (1). No problem—except, of course, that chemistry doesn't work that way.

Kervran's book jumped from one practical application of his wonderful new arithmetical chemistry to another. He made sweeping statements claiming that all ordinary chemical explanations had been ruled out, but without supplying any meaningful data. His Chapter 19 ("How to Make Experiments with Biological Transmutations Successful") was essentially a description of how *not* to do chemistry.

> In order to succeed in transmuting elements biologically it is necessary to abandon certain concepts of the so-called "exact" sciences, which are

exact only for simple and isolated cases foreign to biology. (P. 114)

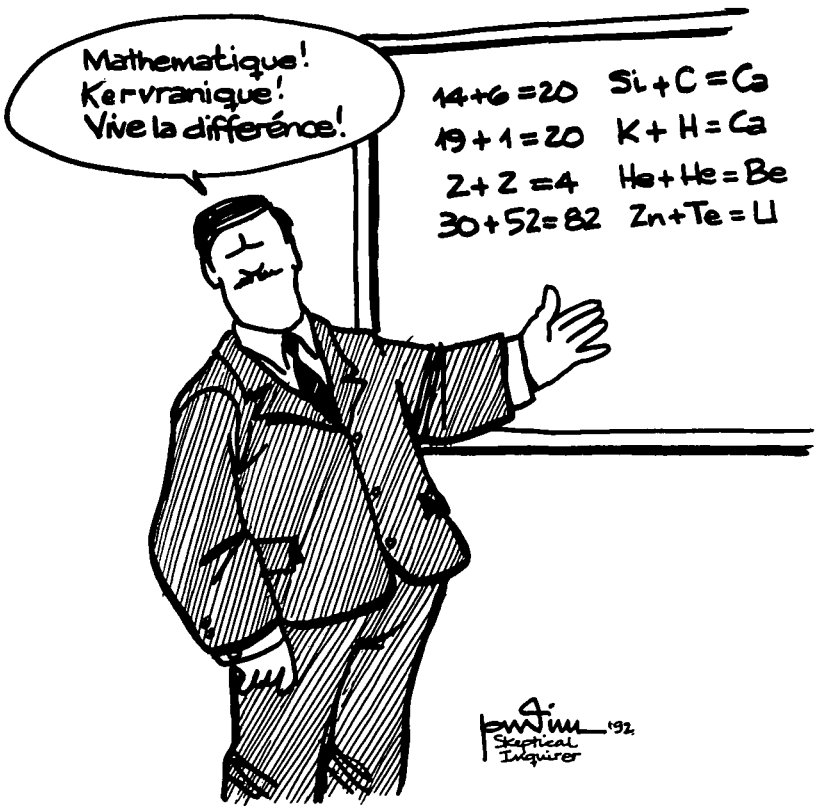
After several paragraphs on the limitations of biological transmutation (some of the product element had to be present initially "to serve as a catalyst"), Kervran continued:

> One should never start with absolutely pure products. The metabolic conditions of the animal or vegetal cell must be retained in order to verify an increase of the elements, a proof which will have no room for contention on the part of those chemists who are prone to reject everything new *a priori*. (P. 115)

Instead of doubly distilled water, he recommended Evian mineral water for culture media. Likewise, he was not in favor of using sterilized seeds or soil, preferring to grow experimental plants in earth "rich in microorganisms." He included a lot of technical-sounding detail in his directions for studying phosphorous variation in growing plants, but brushed off the chemical analyses critical to such an experiment: "The amount of phosphorous is determined by adding a sulfo-molybdic solution (classical method)."

My unsigned review appeared in the AAAS journal *Science Books* (May 1973, p. 41), which has since become *Science Books & Films:*

> Unfortunately the Library of Congress has no classification for "Pseudoscience, biological," where Kervran's book belongs. It certainly does *not* belong in QP171 (Metabolism) where it has in fact already been placed. Metabolism? Not



likely! The author hints at as yet undiscovered enzymes to carry out fantastic "nuclido-biological reactions" in which Na is transmuted to K, Si to Ca, Ca to Mg, P to S, etc. An educational purpose might be served by assigning science students this book without comment and asking for their impressions. Any student who failed to account for biological observations by hypotheses more plausible than transmutations of elements, or who failed to comment on the inadequate description of chemical analyses and the uncritical citation of published sources, should be failed. Unfortunately, gullible people not trained in evaluating experimental results and distinguishing useful theories from bizarre ones may be taken in, since the author (or perhaps the translator) has tied these bio-chemical speculations to popular causes: organic gardening and do-it-yourself medicine.

The translator's Foreword revealed certain "spiritual" inclinations that today might be called "New Age," but Kervran himself seemed to operate in a totally secular vein. Some months later, though, I recall stumbling across a copy of *Bible-Science Newsletter* containing an enthusiastic endorsement of Kervran's challenge to well-established scientific principles. I gave no more thought to Louis Kervran until reading the communication in the recent SKEPTICAL INQUIRER.

Realization that Kervran's pseudoscience is still alive, at least in New Zealand, now made me wonder how other reviewers had originally assessed *Biological Transmutations.* In the 1965-84 Master Cumulation of *Book Review Index* I found citations of four reviews, including my own. Sure enough, in *Bestsellers* (1 July 1972; p. 169), published by the University of Scranton (Pennsylvania), Kervran's claims were summed up by Francis J. MacEntee of that university with hardly a trace of skepticism: "If he is correct, this book is a marvelous contribution to man's welfare."

On the other hand, in *Library Journal* (August 1972, p. 2623), Jerrold H. Zar, of the Department of Biological Sciences of Northern Illinois University in DeKalb, thoroughly blasted the book as "a modern-day alchemy." And an unsigned capsule review appeared in *Choice* (November 1972, p. 1149), published by the Association of College and Research Libraries, a division of the American Library Association:

> Presents an unsubstantiated thesis. Kervran outlines his theory superficially, ignores pertinent literature, and presents inadequate experimental support. Abehsera's compilation of Kervran's writings is fragmented and entirely unconvincing. This volume must be considered an exercise in pseudo-science and is unequivocally not recommended.

By now I was curious about the Kervran book's American publisher; so while in the library I turned to the 7th edition of *Publishers Directory.* In 1987 Swan House Publishing Co. was still in business, though it had moved to Brooklyn, New York. Michel Abehsera was listed as "owner and president." Subjects: "natural healing, macrobiotic cooking, Jewish philosophy." Under "Selected Titles," five books were listed, one of them being Louis C. Kervran's *Biological Transmutations.*

—*Walter R. Hearn*

Walter Hearn, of Berkeley, California, is a former biochemistry professor who edits the Newsletter of the American Scientific Affiliation, *published by a "fellowship of Christians in the sciences."*

Forum

Prospecting for Skepticism

ROGER KLARE

I live in a rural county in southeast Ohio. Finding underground water in this area is not always easy. Recently, some people I know needed to drill for water on their farm. They needed to find it quickly, so after contacting a well-driller they turned to a water-witcher to determine where to drill.

The water-witcher carefully marked the exact spot where water would be found. The well-driller proceeded to drill but came up empty. Five more water-witchers came and made their solemn pronouncements; each marked a different spot. The property owners picked one of these locations, and this time the driller found plenty of water. Once again, the ancient ritual of dowsing had apparently proved itself.

The prospecting for water was over, but my prospecting for skepticism had just begun. I understood why the people on this farm had relied on water-witching. Quite simply, they faced an uncertain situation in which they had to act quickly. The dowsers came with glowing recommendations, and their services were free. Yet, as I discovered, the farm residents harbored many doubts about water-witching. Some things were just too unbelievable, they said. They told me how one dowser insisted that if he took money for his services the water he had just located would disappear.

Before the water-witchers came, one of the farm residents had a very good idea of where to drill the well. He thought there might be sufficient water near a 90-foot maple tree. It was a good clue as it turned out, for the driller developed the successful well right next to that tree. Other clues also indicated that underground water might be nearby. In retrospect, the chances for finding water were better than originally thought.

So why bring in skepticism after the water-witchers were gone? I had hoped to locate some geological information and some inexpensive experts before drilling began. But time was short, and the decisions were not mine to make. Still, I wanted to learn more about water-witching in general and my friends' situation in particular.

I listened to their experiences. They wanted to know why water-witching appears to work and what field experiments show. Having read an excellent study of water-witching (Evon Z. Vogt and Ray Hyman, *Water Witching USA*, 2nd ed., University of Chicago Press, 1979), I could answer these questions. As we talked, I discovered a lode of incipient skepticism.

All too often, we become polarized

in the battle to combat pseudoscience. On one side are the true believers, and on the other side are the skeptics. We're locked in an intractable battle. Meanwhile, most people are in the vast middle ground. Many in this middle group are skeptical about paranormal claims, although they do not officially label themselves as skeptics. The people I talked to asked about the evidence for water-witching. I could tell them that the scientific evidence for this practice is not convincing. This information helped strengthen the skepticism they had already expressed to me. And although the information did not change what happened in this case, knowledge can help encourage the questioning attitude that's in all of us.

So we should keep up our prospecting for skepticism. There's much valuable ore just waiting to be tapped.

Roger Klare was chief science writer for Mission to Mars: A National Traveling Exhibition for Science Education.

OUT THERE Rob Pudim

JOSEPH FISHWACKER BUYING A SUIT AT KIRLIAN'S NEW AGE CLOTHIERS.

Letters to the Editor

Subliminal advertising?

It comes as no surprise to me that a majority of the American public believes that subliminal advertising works, as reported in Anthony R. Pratkanis's article, "The Cargo-Cult Science of Subliminal Persuasion" (*SI*, Spring 1992).

As an adjunct professor of communications at Iona College, New Rochelle, N.Y., I teach an advertising copywriting course to juniors and seniors majoring in communications. When we get to the consumer motivation part of the curriculum, I always make a point of asking students to indicate, by a show of hands, if they believe subliminal advertising works, and if they believe it is being widely practiced by advertisers today.

Invariably, the overwhelming majority or students (12 to 13 out of 14, 15, or 16 in the course) say they believe both that it works and that it is in general use by advertisers. I've often been asked by a student at the conclusion of one of my quick classroom surveys, "When are you going to teach us to do it?" (More about this in a minute.)

In the ensuing class discussion, without fail someone will raise the "Eat Popcorn/Drink Coke" study as "proof" that subliminal advertising works. And as proof that it is being widely used by advertisers and advertising agencies, the students present a host of examples (verbally) of ads they have heard contained graphic sexual cues: a naked woman's form in an ice cube, in a glass, in an ad for vodka, in some magazine; the word "sex" in the grains of a detergent, in a photo, in an ad for a laundry product, etc.

At some point in the discussion, I tell the class that I have personally seen the word "sex" clearly (once you know it's there) on a box of Duncan Hines oatmeal cookies. The word was obviously (to me) scratched into the brown textured surface of a cookie pictured on the front of the package.

While some would cite my testimony as evidence of American marketers' subtly attempting to control our minds through subliminal means, I prefer to believe the sexy cookie caper is the result of another, much more mundane cause.

Through Socratic questioning I elicit from the class a list of the possible ways s-e-x could have wound up on the cookie package. The list ranges from Duncan Hines's deliberately directing a conspiracy to the purely by-chance formation of the letters in the cookie dough. (This latter explanation is akin to the theoretical construct that if you put a monkey at a word processor long enough, he'll eventually write *Hamlet*.)

Since the students do have some knowledge of the printing production process, the list they create also includes the possibility that some anonymous printing press operator, lithographer, plate-maker, photo technician, or other tradesman etched the errant letters onto the printing plates or separations as a prank or as an act of revenge for a real or imagined wrong suffered.

While I can't prove what the truth is about how *sex* wound up on the Duncan Hines cookie package, I have been around enough printing plants and printers over the past 30 years to say that, lacking any evidence about conspiracy theories, I feel comfortable in my belief of the prank theory.

Turning to the question of whether subliminal advertising works, that is, whether it produces the intended effect, I look to my own experience and that of every other advertising professional I've come in contact with over almost 30 years.

If subliminal advertising techniques were being used, and if those techniques actually worked, wouldn't there be one textbook available that tells us copywriters and art directors how to do it? Wouldn't there be one seminar for professionals that explains the technique? Wouldn't every advertising agency teach its creative staff the secrets of subliminal persuasion?

How come in my 30 years as a copywriter, copy chief, creative director, and agency president I have never had a client say to me, "Okay, on this ad we want to go with a subliminal sell. Use the hidden-naked-lady-in-the-clouds technique"?

How come I've never had a creative director, account supervisor, or other agency executive say to me, "Psst, here's how we do the subliminal stuff"?

Either it's just not done, or every time it was my turn to learn it, I was absent.

And finally, how come in all these years of advertising history there has never been one whistle-blower who has come forward in a fit of conscience to spill the beans about what goes on behind the closed doors of those big, bad advertising agencies with regard to subliminal advertising techniques? Has there never been a disgruntled agency employee looking to get even with his boss who was on the inside and privy to the secrets of the trade?

I don't think so.

Berton M. Miller
New York, N.Y.

I was glad to see a theme of understanding toward the unenlightened running through your latest issue. Kind insistence is much more effective than antagonism in changing people.

I was one of the many in the 1970s who, with Wilson Bryan Key's books to guide their way, became quite proficient at finding "subliminal" cues in advertising. Most of the people I introduced this concept to were interested in it, and they often joined me in hunting through magazines for evidence, though they tended to lose interest after a while. As I became better and better at seeing things that weren't there, some friends began to think it quite odd.

My conversion came about in a startling fashion. I was looking at one of my roommate's drawings one day, and I began to notice all the subliminal cues that I was so used to seeing in ads. Was my roommate one of "them"? Of course not. I saw right away that I'd been duping myself.

So if you run across people with great skill at finding subliminal messages, suggest (kindly) that they check works of art that they are confident have no subliminal content. You may create some converts to reason.

James J. Kramer
Roseville, Minn.

Augustus De Morgan

Now and then it is important for us to remind ourselves that ours has not necessarily been the only, or even the most, skeptical century. Milton A. Rothman's "Two 19th-Century Skeptics: Augustus De Morgan and John Fiske" (*SI*, Spring 1992) reminds us of two of the best skeptics of the preceding century. De Morgan was an especially intriguing character, who twice resigned his professorship at the University of London over matters of principle involving his attempts to hold the university to its pledge to remain completely nonreligious. I would add just two comments to Rothman's account of De Morgan. He may be "somewhat forgotten" now, but he is certainly not *entirely* forgotten. Among logicians in particular (and De Morgan was one of the best of his age), he is well known for the rules of the propositional calculus which now bear his name—De Morgan's Laws. Indeed, in recent years there has been a renewal of interest in De Morgan among logicians and philosophers because of his many original ideas concerning the logic of relations.

More important, Rothman has missed a great opportunity to remind us that De Morgan exemplified the

principle that wit is often the skeptic's most effective tool. His *A Budget of Paradoxes* was compiled and published after his death by his wife, Sophie Elizabeth De Morgan. It contains many examples of De Morgan's acidic wit aimed at a variety of mathematical and scientific cranks. But perhaps the best item in the collection, the one Rothman might have done well to point to, was a review of a book on spiritualism: *From Matter to Spirit*, by C.D., with a preface by A.B., 1863, In his *Recent British Philosophers* (3rd ed., 1877) David Masson said of De Morgan's review of *From Matter to Spirit* that "for ingenuity and sceptical suggestiveness, as well as wit, . . . there is nothing in the 'Literature of Spiritualism' comparable" (p. 184). Now what makes this review all the more interesting—and effective—is the fact that the book De Morgan was reviewing was a fake. The author, C.D., was Sophie De Morgan; the prefacer, A.B., was De Morgan himself.

George Englebretsen
Lennoxville, Quebec
Canada

Milton Rothman's article, "Two 19th-Century Skeptics," is distinctly misleading in including Augustus De Morgan as an example. De Morgan may have been skeptical of the "crotchets" propounded by cranks in his own field of mathematics, but in other areas he was far from skeptical. Indeed, he was one of the first English intellectuals to endorse the paranormal character of the phenomena exhibited by the American medium, Mrs. Hayden, who gave a séance at his home during her visit to England in 1853. In 1854 his wife, Sophie De Morgan, discovered that their young servant, Jane, possessed mediumistic powers: in addition to table-turning and spirit-rapping, Jane exhibited "travelling clairvoyance"—the nineteenth-century equivalent of "remote viewing." In 1863 Sophie De Morgan published her book, *From Matter to Spirit*, and her husband contributed a lengthy preface endorsing the phenomena he had observed. I have a letter to De Morgan, dated June 9, 1863, from William Howitt, accompanying some extracts from Howitt's book "given by spirit dictation," which De Morgan had asked for. Since De Morgan's preface is dated "July 1863," it is likely that he was using Howitt's extracts in its preparation. It is noteworthy that in this 1863 account of his séance with Mrs. Hayden he writes that he screened the alphabet, from which letters were indicated by raps, from Mrs. Hayden's view; whereas in a letter written shortly after the séance in 1853—published in his wife's *Memoir* in 1882—there is no mention of this screening.

Augustus De Morgan had many admirable qualities, but skepticism was not a prominent feature of his character.

M. H. Coleman
Putnoe
Bedford, England

Milton A. Rothman's focus on nineteenth-century skeptic Augustus De Morgan is somewhat superficial. Evidently Rothman is unaware that De Morgan was a convinced spiritualist and investigated clairvoyance, raps, and table-turning. He was the anonymous author of the preface to his wife's book *From Matter to Spirit: The Result of Ten Years' Experience in Spirit Manifestations* (1863), but later had the courage to give up his anonymity when the second edition of the book was published. I suggest Rothman should consult the entry on De Morgan in my *Encyclopedia of Occultism & Parapsychology* (3rd ed., Detroit, 1991).

Leslie Shepard
Stillorgan, Co. Dublin
Ireland

Readers of Rothman's article on De Morgan and Fiske will be interested to know that there is a modern sequel to De Morgan's book *A Budget of Paradoxes*. Of the three classical Greek geometry problems, squaring the circle, duplicat-

ing the cube, and trisecting the angle, attempts at the last one are still widespread. This is due, in part, to the fact that it is often discussed in high school geometry courses. Many budding mathematicians have spent some time attempting this, the writer included, until a good teacher carefully explained the difference between something never having been done and the impossibility of it being done. Unfortunately, many teachers do not explain this well, and many students do not understand the significance of the difference. Angle trisectors and others who claim to prove the rationality of π or $\sqrt{2}$ are frequent visitors to some university departments of mathematics.

Underwood Dudley has made it his professional hobby to collect the works of modern mathematical cranks, especially trisectors. He has written a wonderful little book, after De Morgan, titled *A Budget of Trisections*. In it he gives more than 100 trisection attempts, with his commentary. There is a general description of the type of person who spends his time trisecting angles, with details on three particular individuals. He also gives a number of ways that an angle *can* be trisected, if you admit tools besides the traditional compass and straightedge.

As Rothman mentions, in 1897 the Indiana Legislature came close to legislating the value of π to be 3.2. An account of this is contained in "House Bill No. 246, Indiana State Legislature, 1897," by Will E. Edington (*Proc. of the Indiana Acad. of Sci.*, 45: 205-210, 1935). The perpetrator of this bill was one Edward J. Goodwin. Interestingly, Goodwin managed to publish a short note on his results in the *American Mathematical Monthly*, 1: 246-247, 1894 (before it became a publication of the Mathematical Association of America), and he used this fact as an argument in support of the bill.

Robert L. Foote
Dept. of Mathematics &
Computer Science
Wabash College
Crawfordsville, Ind.

Milton Rothman replies:

M. H. Coleman and Leslie Shepard claim that Augustus De Morgan was a confirmed spiritualist because he wrote a preface to From Matter to Spirit, *his wife's book. I do not have this book in my library, and so cannot comment on it directly. However, De Morgan gives it a lengthy review in* A Budget of Paradoxes, *and from internal evidence I deduce that De Morgan was simply kidding around. (You have to understand English humor.) He was, in fact, giving his readers a fine lesson in logic: namely, how to avoid making false inferences from the facts. To quote De Morgan: "A.B. very distinctly said that he knew some of the asserted facts, believed others on testimony, but did not pretend to know whether they were caused by spirits, or had some unknown and unimagined origin. This he said as clearly as I could have said it myself."*

Of course, A.B., the author of the preface to From Matter to Spirit, *was Augustus De Morgan himself, and he clearly refuses to claim that the facts described by C.D. (Sophie De Morgan) can be explained only by psychical phenomena. Later he says: "A.B. recommended the spirit-theory as an hypothesis on which to ground inquiry; that is, as the means of suggestion for the direction of inquiry. . . . Many of [the reviewers] consider A.B. as* adopting *the spirit-hypothesis. The whole book was written, as both the authors point out, to suggest inquiry to those who are curious; C.D. firmly believing, A.B. as above." One might infer from this that there was some dissension in the De Morgan household about the validity of spiritualism.*

Elsewhere in A Budget of Paradoxes, *while reviewing a book called* The Divine Drama of History and Civilization, *by the Reverend James Smith, De Morgan writes: "I have several books on that great paradox of our day,* Spiritualism. . . ." *De Morgan's use of the word "paradox" clearly indicates that he lumped spiritualism together with perpetual motion, squaring the circle, and the other lunacies that he budgeted.*

Not convinced

Your news report "NAS Scientists Highly Skeptical About ESP and PK" (*SI*, Spring 1992) comments on differences in doubtfulness between neurobiologists, chemists, and physical scientists, on the one hand, and anthropologists and organismic biologists, on the other (p. 231). While I might be willing to consider anthropologists possibly a bit more gullible, it struck me that there is no reason to expect one kind of biologist to react differently from others. I consequently examined the NAS membership groups in Table 1 quite thoroughly and could find no more than chance differences between disciplines.

Specifically, the distribution of skepticism among disciplines in the whole table has a probability of occurring by chance in about 39 percent of such data (chi-square = 45.9, df = 44, p = .39). I also tested the distribution into two columns, which you discuss ("does not occur" with "extremely skeptical" versus all other categories). This has almost the same chance probability (chi-square = 11.9, df = 11, p = .37). Because the numbers of respondents in the elements of the table are small, a calculated chi-square may give an uncertain approximation to the values of the continuous chi-square function. To avoid small expecteds, I combined rows in various ways (e.g., all physical, all biomedical, and all social scientists, respectively), but could find no significant difference from a chance distribution.

The contention that some disciplines exhibit a lower or higher level of skepticism than others is not supported by these data.

Wolf Roder
Dept. of Geography
University of Cincinnati
Cincinnati, Ohio

Understanding hypnosis

I have read Lewis Jones's review of Robert Baker's book, *They Call It Hypnosis.* He thought it could better be named after the fourth chapter heading, "What Hypnosis Is, What Hypnosis Is Not, and What It Does and Doesn't Do."

The reviewer told us what Baker thinks hypnosis isn't and what it doesn't do, but nothing of the reverse. I presume that is because Baker thinks hypnosis "does not exist."

It is clear that when one simply and totally closes the door to further inquiry into a phenomenon, there is no room left to study it. Unless proved by scientific inquiry, such a course, I submit, is not healthy skepticism, but hypocritical, pseudoscientific blindness—the very thing you have fought for so many years.

As a physician, more so as an obstetrician, I have seen Cesarean sections performed utilizing "hypnosis" alone for anesthesia. I have personally done midforceps delivery with episiotomy and suture repair of the vagina and perineum utilizing only "hypnosis" for anesthesia. In both instances, the patients were singing childhood songs at the time.

Perhaps the problem, as we so often encounter, is one of semantics, not of substance. To understand the phenomenon called "hypnosis," in the modern sense, we must set aside the beliefs of Mesmer and his followers, as well as the hype of stage hypnotists and so-called mentalists, who would have us believe that there is some magic secret about "trance" states, "suggestion," and a "power to impress one's own will upon another." Nothing could be further from the truth.

Perhaps if we start with the proper definitions, as recognized by those who attempt to understand "hypnosis" rather than deny its existence, and in turn utilize the phenomenon for benefit rather than for entertainment, or monetary gains or some kind of hocus-pocus, we can reach some kind of mutual understanding.

"Hypnosis" should really be called "self-hypnosis." The subject, in fact, does it all. The "hypnotist" merely provides a method to make it easier for the subject to do what he wants to do.

"Trance" state is nothing more than a form of relaxation, during which the

subject retains control.

"Suggestion" is what the "hypnotist" says to the subject in this state of relaxation that—if believed by the subject—enables him to more easily do that which he finds it otherwise more difficult to do.

One cannot, via "hypnosis," force anyone to do that which he would not otherwise do *at all*. It simply provides a means to lower inhibitions, permitting the subject to accomplish something he wants to do, even if that is merely to be able to act like a fool. Clearly, Kreskin's subject who could not stab him in the back is a classic example. I wonder if he would try such an experiment with someone who really did want to kill him, but under normal circumstances would not muster the courage? How's that for a $100,000 question?

Perhaps that is why so many have believed in some basic flaw in the German people prior to and during World War II. In its broadest sense, Hitler did accomplish something akin to "mass hypnosis" in leading normal appearing people to commit the horrors of the holocaust.

If we can agree on the above, then perhaps Kreskin may have to part with his $100,000. However, if he is merely trying to test the existence of magic, his money is quite safe.

Hypnosis does exist, and if we try to understand why it exists, as defined above, and why anesthetic states can be so readily induced without the use of drugs, and why people *want* to follow the "leader's" suggestions, then knowledge will be advanced and skepticism will have once again served its purpose.

William Rosenzweig, M.D.
Burlingame, Calif.

Astrology as 'entertainment'

I noted the column on disclaimers in major newspaper astrology columns (*SI*, Spring 1992) with interest, since our local daily carries such a statement. Yep, there was our paper, the *St. Petersburg Times*, included in the list of 42 papers that run a disclaimer in their astrology columns.

Imagine my surprise when the very next day I opened that morning's paper to find, splashed across the front page of the entertainment section, a prominent feature article on a local astrologer. It was all played very "straight," with only a vague mention of any skeptical opinion on astrology. Most ironic, I think, was that at the bottom of the large color photo of the astrologer there was a band of type mentioning the paper's astrology column on page 4. And what's at the end of that column on page 4? "These predictions are intended for entertainment value only."

It's too bad that the media continue to consider so many paranormal and fringe claims as mere "entertainment." Granted, the major dailies that run a disclaimer with their astrology columns do, I believe, a service by pointing out the nonvalidity of astrological claims to the public. Yet, it still remains a problem when they so often print very glowing articles on such subjects, and include them in their entertainment sections. Seems to me there's a double standard going on here.

Greg Simpson
Clearwater, Fla.

'Theological' fluids

Back in the 1970s, when I was at MIT, a printer's devil at the Institute newspaper, *Tech Talk*, inadvertently substituted a "T" for an "R" in "Rheological," producing the announcement of a lecture on "The Theological Behavior of Fluids." This would be an appropriate title for your notice on the work of Garlaschelli et al. on duplicating the liquefaction of the blood of St. Januarius (*SI*, Spring 1992, pp. 236-237). Their suggestion that the substance thought to be the saint's blood is, rather, a thixotropic gel of ferrous oxide is ingenious. It answers the objection repeatedly raised against rationalistic explanations of the phenomenon by defenders of its miraculous nature—that

only melting of some eutectic substance could possibly account for the liquefaction, yet the liquefaction is observed at widely varying temperatures. (See *The Liquefaction of the Blood of St. Januarius*, Catholic Publication Society, New York (1872), or *The Mystery of Naples*, by Edward P. Graham (B. Herder, St. Louis, Mo., 1909).

I would like to point out, however, that the suggestion has been made before. In their authoritative text, *Colloid Science* (Oxford, 1949), A. E. Alexander and P. Johnson make essentially the same observation. I quote from page 586:

> Thixotropic gels of ferric oxide, which have a reddish-brown colour and become more transparent in the sol state, possibly form the contents of the reliquaries used in certain religious ceremonies as "the liquefaction of the blood." (The occurrence of these reliquaries in such places as Naples suggests that the materials used are probably of volcanic origin.)

Alexander and Johnson's suggestion of ferric oxide, rather than ferrous oxide (as Garlaschelli et al. suggest), may have been influenced by the copious work of H. Freundlich, Heller, Szegvari, and others who performed numerous experiments on sols made of ferric oxide, water, and various salts in the 1920s.

In any event, the rather complex procedure used by Garlaschelli et al. (*Nature*, October 10, 1991, p. 507) seems a little too involved, as does Hendry and Lyon's suggestion of clotted blood mixed with thixotropic honey (*Nature*, November 14, 1991, p. 114). Based on Alexander and Johnson's suggestion, the true mixture might be as simple as sea water and ferric oxide from the slopes of Vesuvius—perhaps the extremely fine spherical particles of Fe_2O_3 measuring a few microns in diameter. These would be admirably suited to produce a colloidal dispersion. If this is the true nature of the Neapolitan miracle, and of similar miracles, such as the blood of Saint Pantaleon and St. John the Baptist, we might expect to find references to similar miraculously liquefying blood in the mythologies of Greece and Rome.

Stephen R. Wilk
Melrose, Mass.

Harassing suits

It seems to me that there is an obvious solution to the problem of harassing, intimidating and frivolous lawsuits, not only against CSICOP and individual skeptics (*SI*, Spring 1992) but against whistleblowers of every variety. Surely there are congressmen and senators who would support legislation requiring the litigant who loses a civil suit to pay the costs and legal fees of the winner. Such laws exist in much of the rest of the world, and I can see no reason why they should not be instituted in the United States. At least one prominent American politician has publicly stated that America has too many lawyers handling too many lawsuits. He cannot be the only person who holds such a view.

William R. Harwood
Red Deer, Alberta
Canada

Polywater

The recent book review by Stephen Shore (*SI*, Spring 1992) contains a few statements contrary to fact.

The fame of Boris V. Derjaguin is said to rest "largely on his abortive work on polywater." Derjaguin is arguably the most eminent surface scientist in the (former) Soviet Union. His reputation precedes the polywater affair, which was a mere footnote—and a late one at that—to his distinguished career. The history of polywater began in 1962, when Derjaguin was 60. To my knowledge, he is still alive and active, although he would be nearly 90. He visited Penn State a year or two ago to talk about low-temperature diamond films, a field in which he is a pioneer.

Shore's second error is related to his first. He says that "we have no similar [to the book under review] record of the polywater episode to point to." To the contrary, we have Felix Franks's *Polywater* (MIT, 1981), which is both superbly written and authoritative. Franks, one of the world's leading authorities on water, "almost by coincidence . . . did not become involved in polywater research" (from the dust-jacket of *Polywater*). Thus he writes with detachment illuminated by an encyclopedic knowledge of water (literally: he is the editor of a multi-volume series on water).

Craig F. Bohren
Dept. of Meteorology
Pennsylvania State Univ.
University Park, Pa.

Too generous to reincarnation

In reviewing Michael Talbot's *Your Past Lives: A Reincarnation Handbook* (*SI*, Spring 1992), Peter Huston is much too generous. For he allows that a reincarnation hypothesis is one possible explanation of material of the kind cited by Talbot, and faults him only for "largely ignoring other explanations for the phenomena that he cites as evidence."

But who or what are the persons hypothesized as having lived before? In everyone's everyday understanding of person words—the personal pronouns, personal names, words for people performing certain roles, and so on—persons are members of a very special sort of creatures of flesh and blood. It is only by mistakenly assuming that people really are not corporeal organisms but incorporeal souls that anyone can come to seem to have formulated a reincarnation hypothesis, To have succeeded in so doing, however, the parapsychologist would need first to explain how these souls could at least in principle be originally identified as such and then later reidentified as the same original souls.

Yet how could this be even in principle possible since such souls are supposed to enter or leave and take over or abandon control of human bodies inaudibly, invisibly, and altogether undetectably. Until and unless someone contrives to formulate a falsifiable reincarnation hypothesis, what may appear to be memories of previous lives must be categorically dismissed as simply pseudo-memories. And, if any of Talbot's supposed rememberers of past lives were to come up with information that they could not have acquired by any normal means, then we should have: not evidence for the nonhypothesis of reincarnation; but a prima facie case of retrocognitive ESP.

Antony Flew
Reading, England

Davenport and Robertson

The book review of *The Davenport Conspiracy Revisited* (*SI*, Spring 1992) reminded me that in the last presidential campaign, one candidate seemed to believe the Davenport frauds as fact. *U.S. New and World Report*, February 22, 1988:

> David Frost: What's the one reference to the U.S. in the Bible?
>
> Reverend Dr. Pat Robertson: I think the "young lions of Tardish." Tardish was a place near Cadiz, Spain, and those Phoenician traders who . . . had ships that came over to the United States. They were found as far away as Davenport, Iowa. They mined in Pennsylvania, and there were evidences of them in Vermont.

Gregory Peterson
Albuquerque, N.M.

Dowsing questions

I do not know whether Mark Plummer (*SI*, Letters, Winter 1992, p. 213) has read *Dowsing and Church Archaeology*, but I certainly have. It was written by a professor of archaeology at Newcastle University (UK) and two dowsers. The book is full of detailed drawings of

known church walls, overlaid with equally detailed drawings of ancient walls as "found" by dowsers. Some of these drawings are marked with a single black rectangle that shows the location of the only test-trench that was dug. These digs confirmed the prediction for that location.

However, to a skeptic, there are three problems with the book. First, it is clear from the text that the examples shown are only a small subset (the best examples) of the total work done. Although anathema to "hard" scientists, this sort of blatant data selection seems to be entirely acceptable (and common) among "softer" scientists. Second, there seems to be considerable "redundancy" in the foundation-guessing problem, in that there are clearly areas (along a line of symmetry, for instance) where it would be illogical (improbable) to expect to find walls. Moreover, anyone who had studied previous cases where both new and old walls were totally visible might soon develop a (non-mystic) "feel" for the most likely positions of "future" foundations. Third, the book contains some very detailed drawings where no attempt at all was made to check the dowsers' lines. A gullible reader is likely to be left with a strong impression of incredible accuracy, where none in fact has been demonstrated.

David J. Fisher
Cardiff, Wales

Who should do it?

The article "Credibility in Science and the Press" by Daniel Koshland (*SI*, Forum, Spring 1992) unfortunately provides an example of the very ills it decries. From the material in the article there is no valid way of judging whether the National Resources Defense Council (NRDC) report on Alar was "clearly dubious," and by implication whether the press was guilty of "improper conduct" in covering the report.

Koshland suggests that the press should reveal the journal in which the "information is to be or was published and disclose the track record of the scientists or the group of scientists . . . that are quoted." References are a good idea, and it would have been useful if Koshland had given a reference for his claim that the data was inadequate and that even the most simple checks of its reliability had not been made. With regard to track records, I suspect that this is one of the reasons that the press did cover the Alar report. My impression is that environmental groups have moderately good track records. On the other hand, there are well-publicized cases of inadequate science, and in some cases outright lies, by business (asbestos, thalidomide, DES, and so on). If Koshland has a different impression, then I would ask who is supposed to compile these track records, and why are we supposed to believe them?

Robert Clear
Berkeley, Calif.

More on pyramid cyclosophy

I read the article "Adventures in Science and Cyclosophy," by Cornelis de Jager (*SI*, Winter 1992) with great interest. Even though there are no doubts (at least for me) that if you have even a small set of numbers you can easily manipulate them in a simple way in order to obtain almost any other number you want, some people might argue that the formulas presented by Charles Piazzi-Smyth (and, before him, by John Taylor, who wrote *The Great Pyramid: Why Was It Built? And Who Built It?* in 1859) were much simpler than $W^{\pi}P^{2}L^{1/3}B^{5}$ and others that appeared in the article. An explanation for the existence of simpler formulas like Piazzi-Smyth's is the fact that the more numbers available, the simpler the formulas needed in order to obtain any other number. Piazzi-Smyth had access to many more numbers than those he seemed to have access to at first sight. I quote from Martin Gardner's *Fads and Fallacies in the Name of Science:* "(1) Measurement of various Pyramid lengths are far from established. . . . In many cases

Smyth had a choice of several lengths to pick from. In other cases he used measurements made by himself. And sometimes he added together conflicting measurements and used the average. (2) The figures which represent scientific truths are equally vague. The distance to the sun, for example, was not known with great accuracy in Smyth's days and, besides, the distance varies considerably because the earth's path is . . . an ellipse. In such cases you have a wide choice of figures. You can use the earth's shortest distance to the sun, or the longest, or the mean. And in all three cases you can choose between conflicting estimates made by different astronomers of the time. The same ambiguity applies to almost every scientific 'truth' employed by Smyth."

Besides that, I think that one should not press too hard the fact that it is ridiculous to find a formula that relates the base length of the pyramid with the distance between the earth and the sun in kilometers just because the metric system was introduced only about two centuries ago. Someone might say that the kilometer is a "natural" measure (since it was originally defined so that the length of the earth meridian would be 40,000 kilometers) and deduce from it that the builders of the pyramid not only knew the distance between the earth and the sun but they also knew the length of the earth meridian. You know, if there is a way of turning an argument upside down, someone will do it.

José Carlos Santos
Paris, France

In his excellent illustration of how pseudoscience can conjure up all sorts of explanations using numbers, Cornelis de Jager seems to have made the unfortunate implication that the Egyptians who built the Great Pyramid did not know the earth's diameter and did not know the "precise length of the year."

By coincidence, when the Winter 1992 *SI* arrived, I happened to have just finished reading Dominic Olivastro's article on calendars past, present, and to come in *The Sciences*, September/October 1991. Olivastro writes, "As early as 300 B.C. the Egyptians recognized that the year is roughly 365 and one-quarter days long, a precision born of painstaking observation."

Herman Kinder and Werner Hilgemann, authors of *The Penguin Atlas of World History*, say that the Egyptians had worked out the 365-and-one-quarter-day calendar. This was accomplished during the Old Kingdom, c. 3840-2052 B.C. This was also the time of the construction of the Great Pyramid.

I may be mistaken, but I believe L. Sprague de Camp came to a similar conclusion about Egyptian mastery of practical mathematics and engineering in his book *Ancient Engineers*.

I'm not defending those who turn the pyramid at Cheops into a cult, but I don't know that we can rule out the possibility that the Egyptians had very accurate measures of both time and space.

Monty Vierra
Gotemba, Japan

What have you got to lose?

Consider this scenario. You are in a difficult situation when someone offers an easy possible exit from the difficulty if you will only temporarily and without apparent risk suspend your skepticism. In response to your reluctance, your would-be benefactor hits you with: What have you got to lose?

My experience some years ago may help demonstrate what you have to lose. Back in those pre-liptotripsy days I was in the hospital with a serious case of kidney stones. Every standard procedure short of surgery had proved unsuccessful. The pain was so intense that only large doses of morphine were effective. After five days of this, I was having bad side-effects from the narcotic, so I stopped it cold turkey. Between the resulting pain and the withdrawal symptoms, it was the worst day of my life.

A good friend came to visit. She said she knew a healer who had cured cases like mine just by the laying on of hands. With my approval, the healer would come by later. Miserable as I was, I refused. Why am I so stubborn? What have I got to lose? I answered that I did not know what I had to lose, but that kind of healing was a lot of bull.

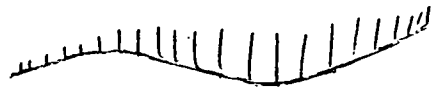
The very next morning, just before I was to go into surgery, the stones passed spontaneously. Oh, the relief. Then it occurred to me: What if I had accepted the healer? Would I ever be able to feel secure in the skeptical belief system that has guided me since adolescence? Would the coincidental timing have been an emotional proof of sorts that paranormal healing works?

In the years since, I have been thankful many times that my determination at a desperate hour to resist nonsense reaffirmed my skeptical viewpoint. I know what I otherwise would have lost.

Albert J. Forman
Concord, Mass.

Youthful skeptical inquiry

The optical illusion at Spook Hill (see Guss Wilder, *SI*, Fall 1991 and Letters, Spring 1992) must be a fairly common phenomenon. It reminded me of a similar experience from my youth, growing up in an obscure little community in northeastern Pennsylvania. It was the mid-1950s, flying-saucer sightings were common news events, and I was a fascinated lad of 10 or 12 hoping against hope for a close encounter of any kind. My brother, six years older than I, and his friends were abuzz with mysterious effects on "gravity hill." On this paranormal spot, automobiles put in neutral would roll uphill. It was conjectured that they may be drawn up the hill by the powerful magnetic effects of the remains of a crashed UFO. Off we went to the hill to observe this mysterious effect firsthand. Indeed, the car, placed in neutral, appeared to roll uphill for some 30 feet or so. Fortunately, rather than starting to dig for UFO remains, my brother returned us home to pick up some tools of technology. We returned with a compass and a level. My youthful hopes for a close encounter were dashed. The compass dutifully pointed only north. The level unmasked the optical illusion. Tall field grass along the road rose steadily up the hillside. The dirt road, however, took a little dip, like this:



It was a good early learning experience in applying the scientific method rather than blithely accepting the (much more exciting) paranormal explanation.

Many years later I attended a lecture where the speaker was an official of the Mutual UFO Network. The organization was introduced as performing unbiased investigations with the aid of reputable scientists. My interest was piqued. Then they got into some investigation examples. Circular impressions were found after a nocturnal light show in a farmer's field. Soil samples from inside and outside the circle were analyzed. The data were presented to illustrate significant changes in the soil, ostensibly created by the extraterrestrial propulsion system of the UFO. Fortunately, my work had made me familiar with analytical methods of this type. The instrumentation used proves only the elements that are present in the sample. The elements were the same in both cases. Counts of their intensities were different. There is some indication of the *relative* quantity of the elements present in a sample that may be derived from such intensity measurements. The relative presence is estimated by the ratio of the intensities. The absolute counts are purely arbitrary. A quick exercise in mental arithmetic told me that the ratios of the intensities presented were about the same for both "inside" and "outside" samples.

It is so easy for the desire to see what we want to see to cloud objectivity. Among the other burdens of parents, family, and educators, perhaps, is also

Local, Regional, and National Organizations

The organizations listed below have aims similar to those of CSICOP but are independent and autonomous. They are not affiliated with CSICOP, and representatives of these organizations cannot speak on behalf of CSICOP.

UNITED STATES

ALABAMA. Alabama Skeptics, Emory Kimbrough, 3550 Watermelon Road, Apt. 28A, Northport, AL 35476 (205-759-2624).

ARIZONA. Tucson Skeptical Society (TUSKS), James McGaha, Chairman, 2509 N. Campbell Ave., Suite #16, Tucson, AZ 85719. **Phoenix Skeptics,** Michael Stackpole, Chairman, P.O. Box 60333, Phoenix, AZ 85028.

CALIFORNIA. Bay Area Skeptics, Wilma Russell, Secretary, 17723 Buti Park Court, Castro Valley, CA 94546. **East Bay Skeptics Society,** Daniel Sabsay, President, P.O. Box 20989, Oakland, CA 94620 (415-420-0702). **Sacramento Skeptics Society,** Terry Sandbek, 3838 Watt Ave., Suite C303, Sacramento, CA 95821-2664 (916-488-3772). **Skeptics Society** (Los Angeles). Contact Michael Shermer, 2761 N. Marengo Ave., Altadena 91001.

COLORADO and WYOMING. Rocky Mountain Skeptics, Béla Scheiber, President, P.O. Box 7277, Boulder, CO 80306.

DISTRICT OF COLUMBIA, DELAWARE, MARYLAND, and VIRGINIA. National Capital Area Skeptics, c/o D. W. "Chip" Denman, 8006 Valley Street, Silver Spring, MD 20910.

FLORIDA. Tampa Bay Skeptics, Gary Posner, 6219 Palma Blvd., #210, St. Petersburg, FL 33715 (813-867-3533).

GEORGIA. Georgia Skeptics, Anson Kennedy, Secretary, P.O. Box 654, Norcross, GA 30091.

ILLINOIS. Midwest Committee for Rational Inquiry, Lawrence Kitsch, President, P.O. Box 2792, Des Plaines, IL 60017-2792.

INDIANA. Indiana Skeptics, Robert Craig, Chairperson, 5401 Hedgerow Drive, Indianapolis, IN 46226.

KENTUCKY. Kentucky Assn. of Science Educators and Skeptics (KASES), Chairman, Prof. Robert A. Baker, 3495 Castleton Way North, Lexington, KY 40502.

LOUISIANA. Baton Rouge Proponents of Rational Inquiry and Scientific Methods (BR-PRISM), Henry Murry, Chairman, P.O. Box 15594, Baton Rouge, LA 70895.

MASSACHUSETTS. Skeptical Inquirers of New England. Contact Laurence Moss, Ho & Moss, 72 Kneeland St., Boston 02111.

MICHIGAN. Great Lakes Skeptics, Carol Lynn, contact, 1264 Bedford Rd., Grosse Pointe Park, MI 84230-1116.

MINNESOTA. Minnesota Skeptics, Robert W. McCoy, 549 Turnpike Rd., Golden Valley, MN 55416. **St. Kloud ESP Teaching Investigation Committee** (SKEPTIC), Jerry Mertens, Coordinator, Psychology Dept., St. Cloud State Univ., St. Cloud, MN 56301.

MISSOURI. Kansas City Committee for Skeptical Inquiry, Verle Muhrer, Chairman, 2658 East 7th, Kansas City, MO 64124. **Gateway Skeptics,** Chairperson, Steve Best, 6943 Amherst Ave., University City, MO 63130.

NEW MEXICO. New Mexicans for Science & Reason, John Geohegan, Chairman, 450 Montclaire SE, Albuquerque, NM 87108; John Smallwood, 320 Artist Road, Santa Fe, NM 87501 (505-988-2800).

NEW YORK. Finger Lakes Association for Critical Thought, Ken McCarthy, 107 Williams St., Groton, NY 13073. **New York Area Skeptics** (NYASk), William Wade, contact person, 97 Fort Hill Road, Huntington, NY 11743-2205. **Western New York Skeptics,** Tim Madigan, Chairman, 3159 Bailey Ave., Buffalo, NY 14215.

NORTH CAROLINA. N.C. Skeptics, Michael J. Marshall, Pres., 3318 Colony Dr., Jamestown, NC 27282.

OHIO. South Shore Skeptics, Page Stephens, 6006 Fir Avenue, Cleveland, OH 44102 (216-631-5987). **Association for Rational Thinking** (Cincinnati area), Joseph F. Gastright, Contact, 111 Wallace Ave., Covington, KY 41014, (513) 369-4872 or (606) 581-7315.

PENNSYLVANIA. Paranormal Investigating Committee of Pittsburgh (PICP), Richard Busch, Chairman, 5841 Morrowfield Ave., #302, Pittsburgh, PA 15217 (412-521-2334).

SOUTH CAROLINA. South Carolina Committee to Investigate Paranormal Claims, John Safko, 3010 Amherst Ave., Columbia, SC 29205.

TEXAS. Austin Society to Oppose Pseudoscience (ASTOP), Lawrence Cranberg, President, P.O. Box 3446, Austin, TX 78764. **Houston Association for Scientific Thinking** (HAST), Darrell Kachilla, P.O. Box 541314, Houston, TX 77254. **North Texas Skeptics,** Joe Voelkering, President, P.O. Box 111794, Carrollton, TX 75011-1794. **West Texas Society to Advance Rational Thought,** Co-Chairmen: George Robertson, 6500 Eastridge Rd., #73, Odessa, TX 79762-5219 (915-367-3519); Don Naylor, 404 N. Washington, Odessa, TX 79761.

(continued on next page)

the need to pass on the tools of skeptical inquiry to the next generation.

Richard A. Foster
Round Rock, Texas

Virtues of common sense

I think that Richard A. Dengrove worries too much that common sense sometimes gets things wrong (*SI*, Letters, Spring 1992). So what? It is still a valuable skill that we should practice at every opportunity. I am much more concerned by the New Age's success at persuading people to suspend completely their critical judgment. If CSICOP is to have any lasting effect on public opinion it *must* convince people that they will benefit if they refuse to believe claims without good reason. Demonstrating the virtues of John Aach's "common sense skepticism" might be the best way of doing this.

Jeremy C. Henty
Cambridge, England

Wrong excutioner

I am an avid reader of your journal and I am especially impressed with the careful and factual way in which your articles are written and edited. It is, of course, important to the scientific cause you promote to always insist on factual accuracy.

I write only to point out an unfortunate factual error in Martin Gardner's otherwise interesting article on J. B. S. Haldane (*SI*, Spring 1992, p. 247).

Stalin did not execute Beria. Beria survived Stalin to be executed by Khrushchev and the Soviet Politburo in 1953—one year after Stalin's death. However, Gardner was right, treason was the crime.

Keep up the good work.

Graydon Forrer
Arlington, Va.

The letters column is a forum for views on matters raised in previous issues. Brief letters (less than 250 words) are welcome. We reserve the right to edit longer ones. They should be typed double-spaced. Due to the volume of letters, not all can be published. Address them to Letters to the Editor, SKEPTICAL INQUIRER, 3025 Palo Alto Dr. NE, Albuquerque, NM 87111.

James Kimberly Apppointed Center for Inquiry Development Officer

CSICOP is pleased to announce that James B. Kimberly, of Kimberly Development Systems, Santa Barbara, California, has been named senior development officer of the Center for Inquiry Campaign. Martin Gardner is voluntary co-chairman of this effort.

The Center for Inquiry Campaign's goals include raising funds for the second phase of the Center for Inquiry building program and the establishment of an endowment fund to ensure the organization's operations in the future.

WASHINGTON. The Society for Sensible Explanations, Philip Haldeman/Michael Dennett, T.L.P.O. Box 8234, Kirkland, WA 98034.

WISCONSIN. Wisconsin Committee for Rational Inquiry, Mary Beth Emmericks, Convenor, 8465 N. 51st St., Brown Deer, WI 53223.

ARGENTINA. CAIRP, Director, Ladislao Enrique Marquez, Jose Marti, 35 dep C, 1406 Buenos Aires.

AUSTRALIA. National: **Australian Skeptics,** P.O. Box E324 St. James, NSW 2000. Regional: **Australian Capital Territory,** P.O. Box 555, Civic Square, 2608. **Newcastle Skeptics,** Chairperson, Colin Keay, Physics Dept., Newcastle University, NSW 2308. **Queensland,** P.O. Box 2180, Brisbane, 4001. **South Australia,** P.O. Box 91, Magill, 5072. **Victoria,** P.O. Box 1555P, Melbourne, 3001. **Western Australia,** 25 Headingly Road, Kalamunda 6076.

BELGIUM. Committee Para, J. Dommanget, Chairman, Observatoire Royal de Belgique, Avenue Circulaire 3, B-1180 Brussels. **SKEPP,** W. Betz, Secretary, Laarbeeklaan 103, B1090 Brussels (FAX: 32-2-4774301).

CANADA. Alberta Skeptics, Elizabeth Anderson, P.O. Box 5571, Station A, Calgary, Alberta T2H 1X9. **British Columbia Skeptics,** Barry Beyerstein, Chairman, Box 86103, Main PO, North Vancouver, BC, V7L 4J5. **Manitoba Skeptics.** Contact John Toews, President, Box 92, St. Vital, Winnipeg, Man. R2M 4A5. **Ontario Skeptics,** Henry Gordon, Chairman, 343 Clark Ave West, Suite 1009, Thornhill, Ontario L4J 7K5. **Sceptiques du Quebec:** Jean Ouellette, C.P. 202, Succ. Beaubien, Montreal H2G 3C9.

CZECHOSLOVAKIA. Contact Milos Chvojka, Inst. of Physics, Czech Academy of Sciences, Na Slovance 2, 1 80 40 Prague 8.

ESTONIA. Contact Indrek Rohtmets, Horisont, EE 0102 Tallinn, Narva mnt. 5.

FINLAND. Skepsis, Lauri Gröhn, Secretary, Ojahaanpolku 8 B17, SF-01600 Vantaa.

FRANCE. Comité Français pour l'Etude des Phénomènes Paranormaux, Claude Benski, Secretary-General, Merlin Gerin, RGE/A2 38050 Grenoble Cedex.

GERMANY. Society for the Scientific Investigation of Para-Science (GWUP), Amardeo Sarma, Convenor, Postfach 1222, *D-6101 Rossdorf.*

HUNGARY. Hungarian Skeptics, János Szentàgothai, c/o Termeszet Vilaga, P.O. Box 25, Budapest 8, 1444. Fax 011-36-1-118-7506.

INDIA. Indian Skeptics, B. Premanand, Chairman, 10, Chettipalayam Rd., Podanur 641-023 Coimbatore Tamil nadu. **Indian Rationalist Association,** Contact Sanal Edamaruku, 779, Pocket 5, Mayur Vihar 1, New Delhi 110 091.

IRELAND. Irish Skeptics, Peter O'Hara, Contact, St. Joseph's Hospital, Limerick.

ITALY. Comitato Italiano per il Controllo delle Affermazioni sul Paranormale, Lorenzo Montali, Secretary, Via Ozanam 3, 20129 Milano, Italy.

JAPAN. Japan Skeptics, Jun Jugaku, Chairperson, 1-31-8-527 Takadanobaba, Shinjuku-Ku, Tokyo 169.

MALTA. Contact: Vanni Pule', "Kabbalah," 48 Sirti St., The Village, St. Julian's.

MEXICO. Mexican Association for Skeptical Research (SOMIE), Mario Mendez-Acosta, Chairman, Apartado Postal 19-546, Mexico 03900, D.F.

NETHERLANDS. Stichting Skepsis, Rob Nanninga, Secretary, Westerkade 20, 9718 AS Groningen.

NEW ZEALAND. New Zealand Skeptics, Warwick Don, Dept. of Zoology, Univ. of Otago, Dunedin, NZ.

NORWAY. NIVFO, K. Stenodegard, Boks 9, N-7082, Kattem. **Skepsis,** Terje Emberland, Contact, P. B. 2943 Toyen 0608, Oslo 6.

RUSSIA. Contact Edward Gevorkian, Ulyanovskaya 43, Kor 4, 109004, Moscow.

SOUTH AFRICA. Assn. for the Rational Investigation of the Paranormal (ARIP), Marian Laserson, Secretary, 4 Wales St., Sandringham 2192.

SPAIN. Alternativa Racional a las Pseudosciencias (ARP). Contact Mercedes Quintana, Apartado de Correos 17.026, E-280 80 Madrid.

SWEDEN. Vetenskap & Folkbildning (Science and People's Education), Sven Ove Hansson, Secretary, Box 185, 101 23 Stockholm.

UKRAINE. Perspectiva, Oleg G. Bakhtiarov, Director, 36 Lenin Blvd., Kiev 252001.

UNITED KINGDOM. SKEPTICAL INQUIRER Representative, Michael J. Hutchinson, 10 Crescent View, Loughton, Essex IG10 4PZ. **The Skeptic** magazine, Editors, Toby Howard and Steve Donnelly, P.O. Box 475, Manchester M60 2TH. **London Student Skeptics,** Michael Howgate, President, 71 Hoppers Rd., Winchmore Hill, London N21 3LP. **Manchester Skeptics,** David Love, P.O. Box 475, Manchester M60 2TH. **Wessex Skeptics,** Robin Allen, Dept. of Physics, Southampton University, Highfield, Southampton S09 5NH.

The Committee for the Scientific Investigation of Claims of the Paranormal

Paul Kurtz, Chairman

Scientific and Technical Consultants

George Agogino, Dept. of Anthropology, Eastern New Mexico University. **William Sims Bainbridge**, professor of sociology, Illinois State University. **Gary Bauslaugh**, dean of technical and academic education and professor of chemistry, Malaspina College, Nanaimo, British Columbia, Canada. **Richard E. Berendzen**, astronomer, Washington, D.C. **Martin Bridgstock**, lecturer, School of Science, Griffith Observatory, Brisbane, Australia. **Richard Busch**, magician, Pittsburgh, Pa. **Shawn Carlson**, physicist, Berkeley, Calif. **Charles J. Cazeau**, geologist, Deary, Idaho. **Ronald J. Crowley**, professor of physics, California State University, Fullerton. **Roger B. Culver**, professor of astronomy, Colorado State Univ. **J. Dath**, professor of engineering, Ecole Royale Militaire, Brussels, Belgium. **Felix Ares De Blas**, professor of computer science, University of Basque, San Sebastian, Spain. **Sid Deutsch**, Visiting Professor of electrical engineering, University of South Florida, Tampa. **J. Dommanget**, astronomer, Royale Observatory, Brussels, Belgium. **Natham J. Duker**, assistant professor of pathology, Temple University. **Barbara Eisenstadt**, educator, Clifton Park, N.Y. **John F. Fischer**, forensic analyst, Orlando Fla. **Frederic A. Friedel**, philosopher, Hamburg, West Germany. **Robert E. Funk**, anthropologist, New York State Museum & Science Service. **Sylvio Garattini**, director, Mario Negri Pharmacology Institute, Milan, Italy. **Laurie Godfrey**, anthropologist, University of Massachusetts. **Gerald Goldin**, mathematician, Rutgers University, New Jersey. **Donald Goldsmith**, astronomer; president, Interstellar Media. **Clyde F. Herreid**, professor of biology, SUNY, Buffalo. **Terence M. Hines**, professor of psychology, Pace University, Pleasantville, N.Y. **Philip A. Ianna**, assoc. professor of astronomy, Univ. of Virginia. **William Jarvis**, chairman, Public Health Service, Loma Linda University, California. **I. W. Kelly**, professor of psychology, University of Saskatchewan. **Richard H. Lange**, chief of nuclear medicine, Ellis Hospital, Schenectady, New York. **Gerald A. Larue**, professor of biblical history and archaeology, University of So. California. **Bernard J. Leikind**, staff scientist, GA Technologies Inc., San Diego. **William M. London**, assistant professor of health education, Kent State University. **Jeff Mayhew**, computer consultant, Aloha, Oregon. **Thomas R. McDonough**, lecturer in engineering, Caltech, and SETI Coordinator of the Planetary Society. **James E. McGaha**, Major, USAF; pilot. **Joel A. Moskowitz**, director of medical psychiatry, Calabasas Mental Health Services, Los Angeles. **Robert B. Painter**, professor of microbiology, School of Medicine, University of California. **John W. Patterson**, professor of materials science and engineering, Iowa State University. **Steven Pinker**, assistant professor of psychology, MIT. **James Pomerantz**, professor of psychology, Rice University; **Gary Posner**, M.D., St. Petersburg, Fla. **Daisie Radner**, professor of philosophy, SUNY, Buffalo. **Michael Radner**, professor of philosophy, McMaster University, Hamilton, Ontario, Canada. **Robert H. Romer**, professor of physics, Amherst College. **Milton A. Rothman**, physicist, Philadelphia, Pa. **Karl Sabbagh**, journalist, Richmond, Surrey, England. **Robert J. Samp**, assistant professor of education and medicine, University of Wisconsin-Madison. **Steven D. Schafersman**, geologist, Houston. **Chris Scott**, statistician, London, England. **Stuart D. Scott, Jr.**, associate professor of anthropology, SUNY, Buffalo. **Erwin M. Segal**, professor of psychology, SUNY, Buffalo. **Elie A. Shneour**, biochemist; director, Biosystems Research Institute, La Jolla, California. **Steven N. Shore**, astronomer, NASA Goddard Space Flight Center, Md. **Barry Singer**, psychologist, Eugene, Oregon. **Mark Slovak**, astronomer, University of Wisconsin-Madison. **Douglas Stalker**, associate professor of philosophy, University of Delaware. **Gordon Stein**, physiologist, author; editor of the *American Rationalist*. **Waclaw Szybalski**, professor, McArdle Laboratory, University of Wisconsin-Madison. **Ernest H. Taves**, psychoanalyst, Cambridge, Massachusetts. **Sarah G. Thomason**, professor of linguistics, University of Pittsburgh, editor of *Language*.

Subcommittees

Astrology Subcommittee: Chairman, I. W. Kelly, Dept. of Educational Psychology, University of Saskatchewan, Saskatoon, Saskatchewan S7N 0W0, Canada.

College and University Lecture Series Subcommittee: Chairman, Paul Kurtz; Lecture Coordinator, Ranjit Sandhu, CSICOP, Box 703, Buffalo, NY 14226-0703.

Education Subcommittee: Chairman, Steven Hoffmaster, Physics Dept., Gonzaga Univ., Spokane, WA 99258-0001; Secretary, Wayne Rowe, Education Dept., Univ. of Oklahoma, 820 Van Vleet Oval, Norman, OK 73019.

Electronics Communications Subcommittee: Chairman, Page Stevens, 6006 Fir Ave., Cleveland, OH 44102.

Paranormal Health Claims Subcommittee: Co-chairmen, William Jarvis, Professor of Health Education, Dept. of Preventive Medicine, Loma Linda University, Loma Linda, CA 93350, and Stephen Barrett, M.D., P.O. Box 1747, Allentown, PA 18105.

Parapsychology Subcommittee: Chairman, Ray Hyman, Psychology Dept., Univ. of Oregon, Eugene, OR 97402.

UFO Subcommittee: Chairman, Philip J. Klass, 404 "N" Street S.W., Washington, D.C. 20024.

The Committee for the Scientific Investigation of Claims of the Paranormal

The Committee for the Scientific Investigation of Claims of the Paranormal attempts to encourage the critical investigation of paranormal and fringe-science claims from a responsible, scientific point of view and to disseminate factual information about the results of such inquiries to the scientific community and the public. It also encourages critical thinking, an appreciation of science, and the use of reason in examining important issues.

To carry out these objectives the Committee:

- Maintains a network of people interested in critically examining paranormal, fringe-science, and other claims, and in contributing to consumer education.
- Prepares bibliographies of published materials that carefully examine such claims.
- Encourages and commissions research by objective and impartial inquiry in areas where it is needed.
- Convenes conferences and meetings.
- Publishes articles, monographs, and books that examine claims of the paranormal.
- Does not reject claims on a priori grounds, antecedent to inquiry, but rather examines them objectively and carefully.

The Committee is a nonprofit scientific and educational organization. The SKEPTICAL INQUIRER is its official journal.